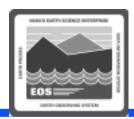


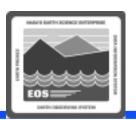
PRODUCTION PLANNING AND PROCESSING

ECS Release 5B Training

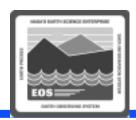
Overview of Lesson



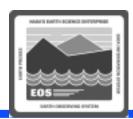
- Introduction
- Production Planning and Processing (Context)
- Production Requests (Including Production Rules)
- Launching the Production Request Editor
- Creating/Updating/Deleting a Production Request
- Reviewing/Deleting Data Processing Requests
- Launching Planning Workbench-Related GUIs



- Creating a New Production Plan (Including Defining a Production Strategy and Reviewing a Plan Timeline)
- Resetting/Cleaning the PDPS Database
- Troubleshooting Production Planning Problems
- Launching the AutoSys GUI Control Panel
- Configuring AutoSys Screens/Displays
- Reviewing Hardware Status, DPR
 Dependency, DPR Production Timeline,
 Alarms, and Job Activities
- Modifying Job Status

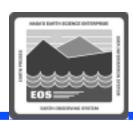


- Reviewing Activity and Job Dependency Reports
- Defining and Running Monitors/Browsers
- Changing the Database Maintenance Time
- Tuning System Parameters
- Troubleshooting Processing Problems
- Launching the Quality Assurance (QA)
 Monitor
- Performing Science Product Quality Assurance
- Regenerating Granules in Response to a Loss of Files from the Archive

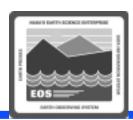


Practical Exercise

- Launching the Production Request Editor
- Creating a New Production Request
- Editing/Modifying a Production Request
- Deleting a Production Request
- Reviewing Data Processing Requests
- Deleting a Data Processing Request
- Launching the Production Strategies GUI
- Launching Production Workbench-Related GUIs
- Defining a Production Strategy
- Creating a New Production Plan
- Reviewing a Plan Timeline

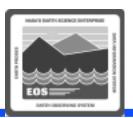


- Practical Exercise (Cont.)
 - Cleaning the PDPS Database
 - Troubleshooting Production Planning Problems
 - Launching the AutoSys GUI Control Panel
 - Configuring AutoSys Runtime Options
 - Reviewing Hardware Status (Including Changing Hardware Status Views)
 - Reviewing DPR Dependencies
 - Reviewing the DPR Production Timeline
 - Reviewing Alarms (Including Selecting Alarms to Be Displayed)
 - Specifying Job Selection Criteria and Reviewing Job Activities
 - Determining the Ownership of an AutoSys Job



- Practical Exercise (Cont.)
 - Modifying Job Status (Including Sending an Event to a Job) Using AutoSys
 - Reviewing Activity Reports and Job Dependency Reports
 - Defining and Running Monitors/Browsers
 - Reviewing the Database Maintenance Time
 - Modifying System Parameters in Configuration Files
 - Troubleshooting Processing Problems
 - Launching the QA Monitor GUI
 - Updating QA Metadata
 - Regenerating Granules in Response to a Loss of Files from the Archive

Objectives



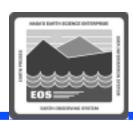
OVERALL:

 Develop proficiency in the procedures that apply to production planning and production processing operations

SPECIFIC:

- Describe the general functions and processes included in the Planning and Data Processing Subsystems (in the context of ECS operations)
- Perform the steps involved in...
 - » launching the production request editor
 - » creating a new production request
 - » modifying a production request
 - » deleting a production request
 - » reviewing data processing requests

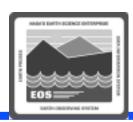
Objectives (Cont.)



SPECIFIC (Cont.):

- Perform the steps involved in...
 - » deleting a data processing request
 - » launching the production strategies GUIs
 - » launching planning workbench-related GUIs
 - » defining a production strategy
 - » creating a new production plan
 - » reviewing a production plan timeline
 - » cleaning the PDPS database
 - » troubleshooting production planning problems
 - » launching the AutoSys GUI Control Panel
 - » configuring AutoSys runtime options
 - » reviewing hardware status (including changing hardware status views) using AutoSys

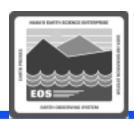
Objectives (Cont.)



SPECIFIC (Cont.):

- Perform the steps involved in...
 - » reviewing DPR dependencies
 - » reviewing the DPR production timeline
 - » reviewing AutoSys alarms (including selecting alarms to be displayed)
 - » specifying job selection criteria and reviewing job activities using AutoSys
 - » determining the ownership of an AutoSys job
 - » modifying job status (including sending an event to a job) using AutoSys
 - » reviewing activity reports and job dependency reports
 - » defining and running monitors/browsers
 - » reviewing the database maintenance time

Objectives (Cont.)



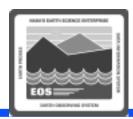
• SPECIFIC (Cont.):

- Perform the steps involved in...
 - » modifying system parameters in configuration files
 - » troubleshooting processing problems
 - » launching the QA Monitor GUI
 - » updating QA metadata
 - » regenerating granules in response to a loss of files from the archive

STANDARDS:

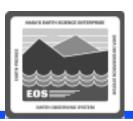
- Lesson content (procedures in the lesson)
- Mission Operation Procedures for the ECS Project (611-CD-500-001)

Production Planning and Processing



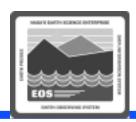
ECS Context

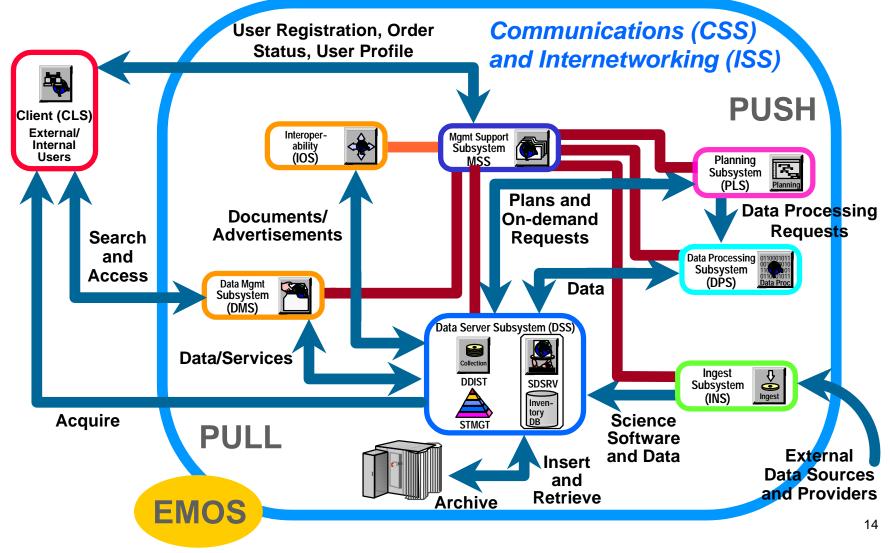
- ECS production planning and processing processes are accomplished at the Distributed Active Archive Centers (DAACs)
- People involved in production planning and processing activities are...
 - » Production Planners
 - » Production Monitors

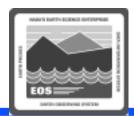


- ECS Context (Cont.)
 - Production Planner
 - » performs planning functions; especially, using the Planning Subsystem (PLS) to create Data Processing Requests and specify which requests are to be processed as part of a particular Production Plan
 - Production Monitor
 - » keeps track of operations in the Data Processing Subsystem, especially the execution of science data processing jobs (creation of data products)

ECS Context Diagram



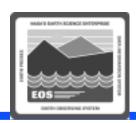


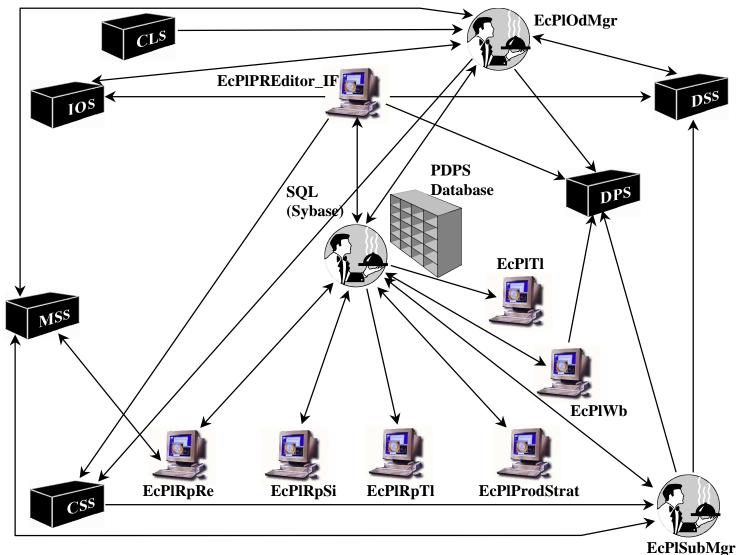


Planning Subsystem

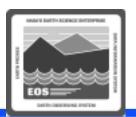
- provides a mechanism for accomplishing the following general functions:
 - » Defining DAAC production resources
 - » Scheduling production resources for nonproduction-related activities
 - » Defining data processing jobs to be performed at the DAAC
 - » Generating efficient plans for scheduling defined data processing jobs
 - » Coordinating production with the Data Server Subsystem and Data Processing Subsystem to achieve a highly automated production system

Planning Architecture



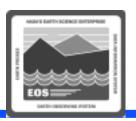


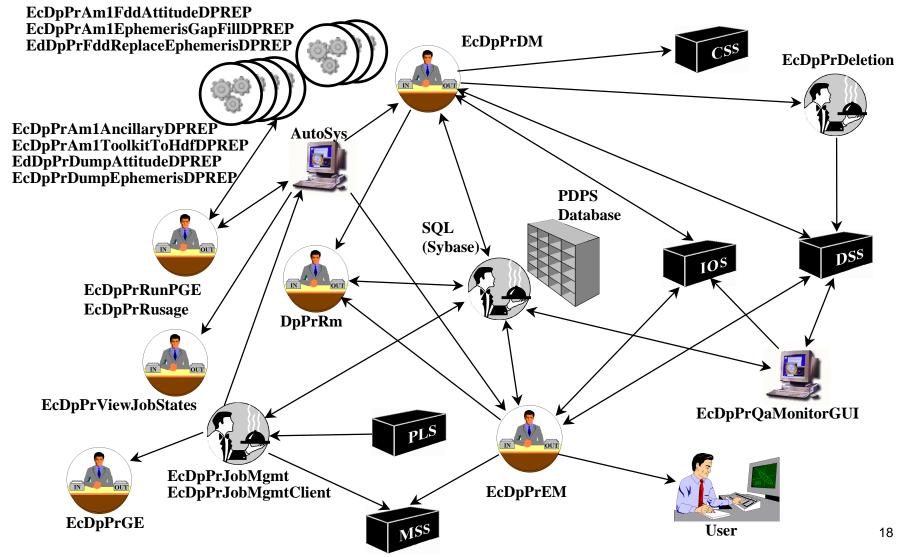
625-CD-506-002

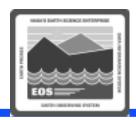


- Data Processing Subsystem
 - provides a mechanism for accomplishing the following general functions:
 - » Managing the allocation of data processing jobs to the site's data processing resources
 - » Managing, queuing, and executing data processing jobs to produce data products
 - » Supporting preliminary processing of ancillary data sets

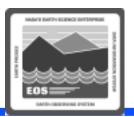
Data Processing Architecture (PRONG)



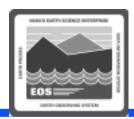




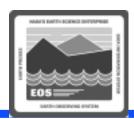
- PLANG is the Planning Subsystem computer software configuration item (CSCI)
 - Resource Planning Workbench
 - » Resource Editor (EcPIRpRe)
 - » Resource Scheduler (EcPIRpSi)
 - » Resource Reservation Planning Master Timeline GUI (EcPIRpTI)
 - Production Request Editor (EcPIPREditor)
 - Production Planning Workbench
 - » Planning Workbench GUI (EcPIWb)
 - » Production Strategies GUI (EcPIProdStrat)
 - » Planning Master Timeline GUI (EcPITI)



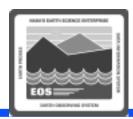
- PLANG (Cont.)
 - On-Demand Manager (EcPlOdMgr)
 - Subscription Manager (EcPlSubMgr)
 - Sybase Structured Query Language (SQL) Server
 - Message Handler (EcPIMsh)
 - System Name Server (EcPISns)
 - Resource Model (EcPIRpRm, EcPIRm)



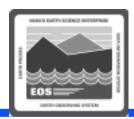
- PLANG (Cont.)
 - Start-up and shutdown scripts used by planning personnel (/usr/ecs/MODE/CUSTOM/utilities directory)
 - » EcPlSomeStart
 - » EcPIAIIStart
 - » EcPIPRE_IFStart
 - » EcPIProdStratStart
 - » EcPIRpAllStart
 - » EcPIRpReStart
 - » EcPIRpSiStart
 - » EcPISubsEditStart
 - » EcPITIStart
 - » EcPIWbStart



- PLANG (Cont.)
 - Start-up and shutdown scripts used by planning personnel (/usr/ecs/MODE/CUSTOM/utilities directory) (Cont.)
 - » EcDpPrQaMonitorGUIStart
 - » EcPISlay
 - » EcPISIayAII
 - » EcPIRpSlayAll

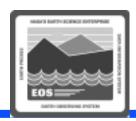


- PLANG (Cont.)
 - Start-up scripts called by other applications (not normally invoked directly by planning personnel)
 - » EcPIMshStart
 - » EcPIRmStart
 - » EcPIRpRmStart
 - » EcPISnsStart
 - » EcPIStart
 - » EcPIRpFetchBaseline

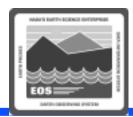


PLANG (Cont.)

- Other scripts
 - » EcPlCdsPingServers
 - » EcPIDbClean
 - » EcPIDbBuild
 - » EcPIDbDrop
 - » EcPIDbDump
 - » EcPIDbMigrate
 - » EcPIDbPatch
 - » reset_db
 - » list_db
 - » save_db

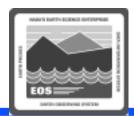


- Data Processing Subsystem is composed of three computer software configuration items (CSCIs):
 - PRONG
 - » Provides the services required to manage and monitor the Science Data Processing environment, which executes Science Software items (PGEs) and produces data products
 - Algorithm Integration & Test Tools (AITTL)
 - » Set of tools used for test and integration of new science software, new versions of science software, and user methods into the Science Data Processing operational environment
 - Science Data Processing (SDP) Toolkit
 - » Provides a set of software libraries which are used to integrate Science Software into the ECS environment

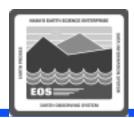


PRONG CSCI

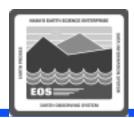
- Job Management (EcDpPrJobMgmt)
- Ground Event process (EcDpPrGE)
- Job Management Client (EcDpPrJobMgmtClient)
- AutoSys/AutoXpert
 - » Event Processor (AutoSys daemon)
 - » Event Server
 - » AutoSys GUIs
 - » AutoXpert GUIs
- Execution Management (EcDpPrEM)
- Resource Management (DpPrRm)
- Data Management (EcDpPrDM)



- PRONG CSCI (Cont.)
 - PGE Execution Manager (EcDpPrRunPGE)
 - Resource Usage (EcDpPrRusage)
 - View Job States (EcDpPrViewJobStates)
 - Terra Data Preprocessing (DPREP)
 - » EcDpPrAm1EdosEphAttDPREP_PGE [Step 1]
 - » EcDpPrAm1FddAttitudeDPREP_PGE [Step 2]
 - » EcDpPrAm1FddEphemerisDPREP_PGE [Step 3]
 - Aqua DPREP
 - Deletion Server (EcDpPrDeletion)
 - Sybase SQL Server
 - Quality Assurance Monitor (EcDpPrQaMonitorGUI)

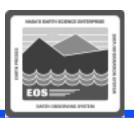


- PRONG (Cont.)
 - Start-up script used by production personnel (/usr/ecs/MODE/CUSTOM/utilities directory)
 - » EcDpPrAutosysStart
 - Start-up scripts called by other applications (not normally invoked directly by production personnel)
 - » EcDpPrDeletionStart
 - » EcDpPrJobMgmtClientStart
 - » EcDpPrJobMgmtStart
 - » EcDpPrStart
 - » EcDpProcessingAppStart
 - » EcEcsAppStart
 - » EcPIPlanningAppStart
 - » EcPIStart
 - » EcPlSubMgrStart

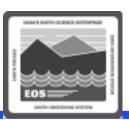


- PRONG (Cont.)
 - Start-up script used by production personnel (/usr/ecs/MODE/CUSTOM/utilities directory on the Planning/Management Workstation)
 - » EcDpPrQaMonitorGUIStart
 - Other script available on the Queuing Server:
 - » EcDpPrCleanup

Production Requests



- Production planning at the Distributed Active Archive Centers (DAACs)
 - process by which the Production Planner notifies the Planning Subsystem (PLS) of the science processing jobs that are to be processed and what data to process
- Science Software (SS)
 - does the actual data processing
 - is developed at Science Computing Facilities (SCFs)
 - is embodied in Product Generation Executives (PGEs) when the software is integrated into the ECS production processing environment

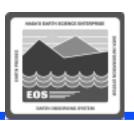


PGEs

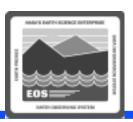
 science software code (e.g., executable programs or shell scripts) that contain the instructions for processing data to create the desired products

Production Request (PR)

- Production Planner defines ECS science data processing jobs in terms of PRs
- A PR is an order for data to be produced by the data processing system
- A single PR may specify...
 - » several jobs that are to be run over a period of time
 - » a single job producing a single set of data

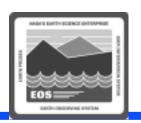


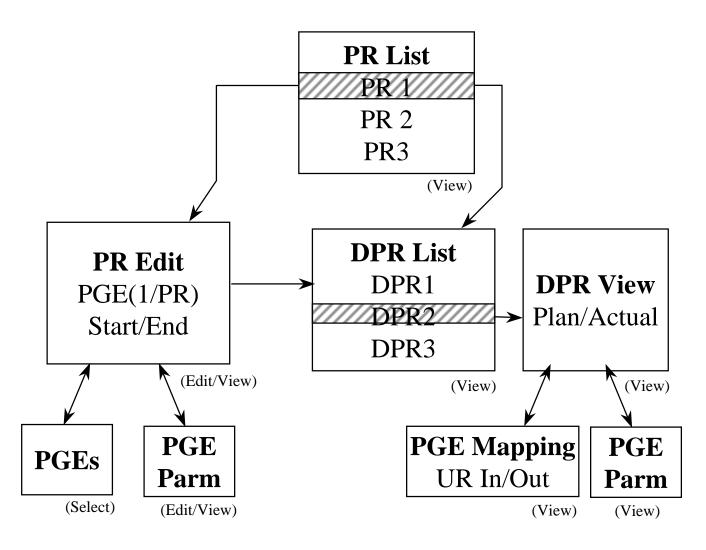
- Production Request (Cont.)
 - may apply to the processing of new data (standard PRs or standing orders)
 - may apply to the reprocessing of existing data (reprocessing PRs)
 - each PR identifies a specific PGE for generating a particular type of product
 - » some PGEs are dependent on others; i.e., some PGEs require input data that are the output of other PGEs
 - planning software will recognize and reject a PR when the PR specifies a PGE that requires data from another PGE that has not yet been specified in a PR

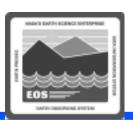


Planning Subsystem

- uses each PR to generate either one or a series of Data Processing Requests (DPRs)
 - » each DPR corresponds to one execution of a single PGE
 - » each DPR contains the information that is needed by the SDPS processing function
- checks the availability of the data required for the DPR
- determines what data will be included in the DPR output
 - » so the system can make predictions concerning the future availability of data

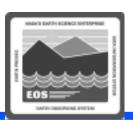




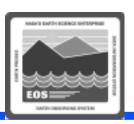


Types of Processing

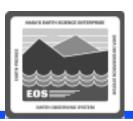
- Routine Processing
 - » pre-defined software production processing that is periodic and keyed to data arrival
- Reprocessing
 - » using a new, improved PGE to process data that had previously been processed with an older version of the PGE
- Ad Hoc Reprocessing
 - » re-running a PGE to achieve a better result
- On-Demand Processing
 - » ad-hoc processing initiated by either the Planning Subsystem or an end-user (as opposed to the Production Planner)



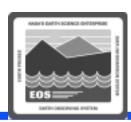
- Production Rules (Cont.)
 - Instructions about how a particular PGE is to be run
 - Specify a wide range of information such as...
 - » input and output data types
 - » frequency of execution
 - » activation conditions
 - » error handling instructions
 - PGE profiles
 - » permit a PGE to use different sets of production rules
 - » allow running a PGE with different input data sets, or activation conditions



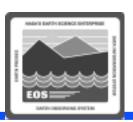
- Production Rules (Cont.)
 - Are entered when a PGE undergoes Science
 Software Integration and Test (SSI&T) at the DAAC
 - Where applicable, default parameter values are entered during SSI&T
 - Some parameters can be overridden when a Production Request is entered
 - Types of conditions that can be specified for each PGE:
 - » time period for which the PGE will run
 - » PGE inputs
 - » PGE outputs
 - » runtime parameter values
 - Some (but not all) production rules can work with other production rules



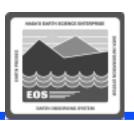
- Production Rules (Cont.)
 - Production rules are often used for the selection of dynamic inputs
 - » dynamic internal inputs are produced by other PGEs (they are called dynamic internal inputs because they are produced at an ECS DAAC)
 - » dynamic external inputs are periodically ingested and stored in the Data Server Subsystem (they are termed dynamic external inputs because they are produced outside of the DAAC)
 - » static inputs are granules that are inserted during the SSI&T process and are retrieved not on the basis of time but by Earth Science Data Type (ESDT) and science group



- Production Rules (Cont.)
 - Methods of defining production rules
 - » science metadata is entered in various types of files during the SSI&T process
 - » parameter values are entered when a Production Request is created to schedule the PGE
 - During SSI&T at the DAAC information concerning the production rule(s) applicable to the PGE is included in Object Description Language (ODL) files
 - ODL files use 'parameter equals value' format

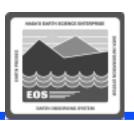


- Production Rules (Cont.) Categories of ODL files
 - PGE Science Metadata ODL Files
 - ESDT Science Metadata ODL Files
 - Production Rule-Specific Science Metadata ODL Files
 - » Orbit Definition ODL Files
 - » Path Map Definition ODL Files

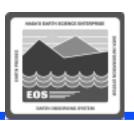


Release 5 Production Rules

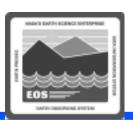
- Basic Temporal
 - » Temporal (time) range of inputs matches the temporal range of outputs
- Advanced Temporal
 - » Temporal range of inputs is offset from the expected temporal range of inputs and outputs
- Alternate Inputs
 - » PGE is run with different inputs based on the availability or quality of various alternate input data sets
- Optional Inputs
 - » PGE is run with specified optional inputs if available; otherwise, PGE is run without them



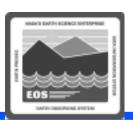
- Release 5 Production Rules (Cont.)
 - Minimum/Maximum Number of Granules
 - » Minimum number of input granules needed for full data coverage and maximum number of input granules to search for may be specified
 - » Minimum and maximum number of outputs expected from the PGE may be specified
 - Optional DPRs
 - » The only DPRs executed are those for which the nonroutine key input data actually become available (i.e., are either produced in data processing or can be acquired from the archive)
 - Intermittent Activation
 - » Every nth DPR is activated; all other DPRs are skipped



- Release 5 Production Rules (Cont.)
 - Metadata Checks
 - » DPR is run only if input data's metadata value(s) meet(s) certain criteria
 - Metadata Query
 - » Input granule selection is based on metadata value
 - Spatial Query/Spatial Pad
 - » Input granule selection is based on the spatial coverage of another input (i.e., the key input)
 - » Spatial Pad involves adding area to all sides of the key input's spatial shape

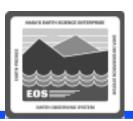


- Release 5 Production Rules (Cont.)
 - Closest Granule
 - » DPR is generated if a required input granule within a particular time range (rather than an exact time) is available; otherwise, no DPR is generated
 - » Supersedes the Most Recent Granule Production Rule
 - Orbital Processing
 - » Selection of input times is based on orbit information

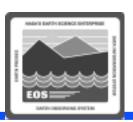


Basic Temporal Production Rule

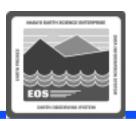
- Defines the time frame for the PGE along with its input and output data
- Typically scheduled to run using input data that become available periodically (every hour, every day, etc.)
- Use input data for a particular period of time
- Produce output for a specified length of time
- Data the PGE takes in (its input) and the data it produces (its output) have the same period (or some subset of the same period) as the PGE



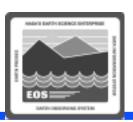
- Basic Temporal Production Rule (Cont.)
 - Example One:
 - » A MODIS PGE processes data for five-minute intervals, producing Level 1B granules
 - » The PGE requires as input the specific five-minute Level 1A granule that is contemporaneous with (covers the same five-minute time period as) the Level 1B granule to be produced
 - » Using the Basic Temporal Production Rule, a fiveminute Level 1A granule is staged as input to the PGE and a five-minute Level 1B granule is expected as output, both matching the time frame for which the PGE is run



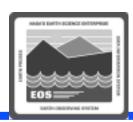
- Basic Temporal Production Rule (Cont.)
 - Example Two:
 - » A CERES PGE processes data for 24-hour intervals, producing 24-hour Level 1A granules as output
 - » As input the PGE takes Level 0 data that is ingested every two hours
 - » Using the Basic Temporal Production Rule, twelve two-hour Level 0 granules are staged as input to the PGE and a 24-hour Level 1A granule is expected as output, matching the time frame for which the PGE is run



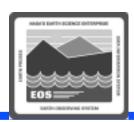
- Basic Temporal Production Rule (Cont.)
 - Fundamental elements used to define the Basic Temporal Production Rule are...
 - » period
 - » boundary
 - Period is the length of time for which a PGE processes data or the length of time for which input and output data is collected
 - » A PGE that is subject to the Basic Temporal Production Rule only and that processes data in twohour blocks, takes in data that relates to a particular two-hour interval and produces output data for that same two-hour period
 - » Data that has a period of 15 minutes was collected or produced for a 15-minute time period



- Basic Temporal Production Rule (Cont.)
 - Boundary is the starting point for the data or PGE
 - » Depending on the characteristics of the data or PGE, the boundary may be the start of a minute or hour or day or week (etc.)
 - » If a PGE's boundary is the start of the hour, it processes data that starts every hour and runs on data for the length of its period
 - » If data comes in every day, PDPS predicts that the data is going to be available at the start of the day and allows scheduling of PGEs that use the data as input accordingly



- Basic Temporal Production Rule (Cont.)
 - Both the PGE itself and the input data have a boundary and period associated with them
 - » So PDPS can determine the frequency of processing for a Basic Temporal PGE and the time period for its inputs and outputs
 - PDPS uses period and boundary in combination to plan the processing of each PGE, including determining its input requirements and anticipated output (which may be input to other PGEs)
 - » If a PGE has a period of one hour and a boundary of "start of day," it is scheduled every hour, beginning at midnight
 - » If an input has a period of 15 minutes and boundary of "start of hour," PDPS predicts it every 15 minutes beginning on the hour



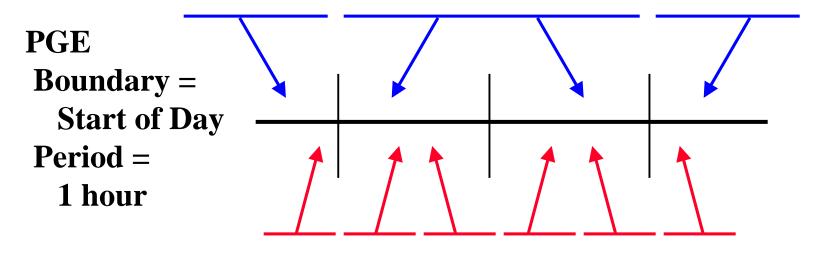
- Basic Temporal Production Rule (Cont.)
 - Additions to the Basic Temporal Production Rule
 - » boundary offset
 - » end-of-month anomaly
 - Illustration of the Basic Temporal Production Rule
 - » PGE boundary is "start of day"
 - » PGE period is one hour
 - » PGE is scheduled for every hour through the day
 - » If a Production Request were entered for two full days of processing, a DPR would be created for the PGE to run every hour; i.e., 48 DPRs total
 - » If a Production Request were created for a four-hour period in the middle of a single day (for example, from 12:00 noon to 4:00 p.m.), then four DPRs would be created

Example of Basic Temporal Production Rule



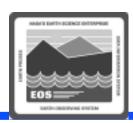
Input One: Boundary = Start of Day

Period = 2 hours

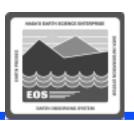


Input Two: Boundary = Start of Day

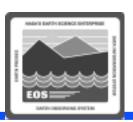
Period = 1/2 hour



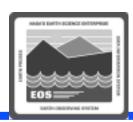
- Advanced Temporal Production Rule
 - Allows for input data to be acquired for a time period other than that of the PGE or its planned inputs/outputs
 - Offset mechanism
 - » specifies on an input basis that the data required for processing is some number of seconds earlier or later than the planned time period for the PGE
 - Example One:
 - » A PGE requires data from its previous execution for interpolation purposes (e.g., one of its inputs is the output of the very same PGE the last time that it ran)
 - » If the PGE processes data for each one-hour interval (producing an hourly product), the Advanced Temporal Production Rule is specified with an offset of minus 3600 seconds (one hour) for the input of the ESDT produced by previous runs



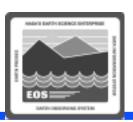
- Advanced Temporal Production Rule (Cont.)
 - Example Two:
 - » A PGE takes as input two-hour Level 0 data to produce an L1A product
 - » Because the edges of the Level 0 data can be difficult to process without preceding and succeeding data, the PGE requires three Level 0 granules, one from the time period before it runs, one for the time period it is currently processing and one for the next time period
 - » The PGE is defined as having three inputs, the first with an Advanced Temporal offset of minus 7200 seconds (two hours), the second with no Advanced Temporal offset and the third with an Advanced Temporal offset of plus 7200 seconds (two hours)



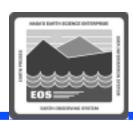
- Advanced Temporal Production Rule (Cont.)
 - Uses the times specified in the Basic Temporal Production Rule as a reference point for specifying offset(s) to request data from a "period" and/or "boundary" different from that of the DPR or its input
 - Offsets ...
 - » are specified as either negative or positive numbers
 - » indicate whether the time period of the input data is before or after that of the DPR (a particular run of a PGE)



- Advanced Temporal Production Rule (Cont.)
 - Begin Period Offset
 - » an amount of time (in seconds) that is specified with respect to the DPR start time
 - » negative beginning offset requests data that was collected before the DPR start time
 - » positive beginning offset requests data with a collection time after the start time of the DPR
 - End Period Offset
 - » an amount of time (in seconds) that is specified with respect to the DPR end time
 - » negative ending offset requests data that ended collection before the DPR end time was reached
 - » positive ending offset requests data that ended collection after the end time of the DPR boundaries
 - Beginning and ending offsets are not absolute cutoffs for data (overlapping granules are staged)

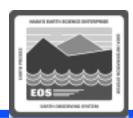


- Advanced Temporal Production Rule (Cont.)
 - Illustration of the Advanced Temporal Production Rule
 - » PGE processes data for every one-hour interval
 - » Input One comes in at two-hour intervals
 - » Input Two is produced every 1/2 hour
 - » Input One: both the Begin Period Offset and End Period Offset are - 7200 seconds (minus two hours)
 - » Every DPR will stage the "previous" Input One (this could be used to get the "previous" or "next" granule of an input)



- Advanced Temporal Production Rule (Cont.)
 - Illustration of the Advanced Temporal Production Rule (Cont.)
 - » Input Two Begin Period Offset for is zero (it will match the Start Time of the DPR)
 - » Input Two End Period Offset is +1800 seconds (plus 1/2 hour)
 - » All Input Two granules will be staged that fall within the time period of the DPR plus 1/2 hour
 - » All Input Two granules within the time period of the DPR are acquired, plus the one from the next 1/2hour time period, for a total of three granules
 - » The additional granule acquired by means of the End Period Offset might be used for interpolation purposes at the end point

Example of the Advanced Temporal Production Rule



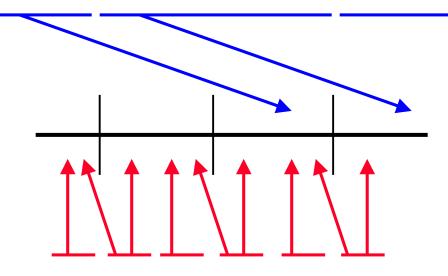
```
Input One: Boundary = Start of Day
```

Period = 2 hours

Begin Period Offset = -7200 (-2 hours)

End Period Offset = -7200 (-2 hours)

PGE
Boundary =
Start of Day
Period =
1 hour

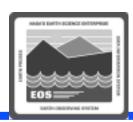


Input Two: Boundary = **Start of Day**

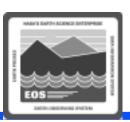
Period = 30 minutes (1/2 hour)

Begin Period Offset = 0

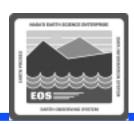
End Period Offset = +1800 (+1/2 hour)



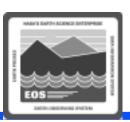
- Alternate Inputs and Optional Inputs Production Rules
 - Very similar rules that involve much the same processing in PDPS
 - Allow a PGE to select various inputs based on timers and priority lists
 - Major difference:
 - » Alternate Inputs requires that one of alternates on the list be used
 - » Optional Inputs allows successful execution of the PGE if no optional input on the list is available



- Alternate Input Production Rule
 - A list of inputs for a PGE is evaluated in priority order
 - » PGE is scheduled and executed with the best priority input that could be found
 - A timer can be used to specify how long to wait for a given alternate choice before proceeding with a choice of lesser priority
 - PGE is not executed until one of the alternate choices has been found

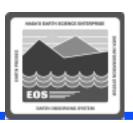


- Alternate Input Production Rule (Cont.)
 - Example:
 - » PGE requires model wind data as an input but is capable of accepting wind data from a Data Assimilation Office (DAO) model, a National Centers for Environmental Prediction (NCEP) model, or climatology
 - » Each input is considered in priority order
 - » A timer value indicates how long to wait before trying the next input
 - » DAO is listed as first choice or "primary" data
 - » NCEP is the second choice
 - » Climatology is the last choice
 - » PGE waits for the DAO timer to expire before running with either NCEP data or climatology
 - » PGE waits for the NCEP timer to expire before running with the climatology data

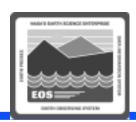


Optional Input Production Rule

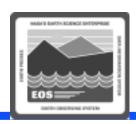
- There is a list of inputs that are desired but not required for execution of a PGE
- Inputs are ranked in priority order
- Timers are set to wait before choosing a lowerpriority type of input
- If none of the inputs on the list becomes available, the PGE starts because the alternatives are classified as "optional"



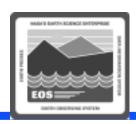
- Optional Input Production Rule (Cont.)
 - Example:
 - » It would be preferable to run a particular MODIS PGE with the output of a MISR PGE as input
 - » However, the MISR output may not be produced every day
 - » So the MODIS PGE lists the MISR input as optional with a two-hour timer
 - » On those occasions when no MISR output is produced, the MODIS PGE waits for two hours and then is executed without the MISR input



- Illustration of the Alternate Inputs and Optional Inputs Production Rules
 - PGE has two inputs that are "required" so they must available for the PGE to be run
 - PGE has one input that is "alternate"
 - » Alternate input can be one of three choices
 - After the pair of required inputs has become available, the alternate inputs are evaluated:
 - » If the primary alternate is available, it is used as input and the PGE is scheduled for execution
 - » One-hour timer on the primary alternate
 - » If the primary alternate is unavailable, the PGE waits until the primary alternate becomes available or the one-hour timer expires, whichever occurs first
 - » If the second alternate is available after the timer for the primary alternate has expired, the second alternate is used as input

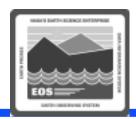


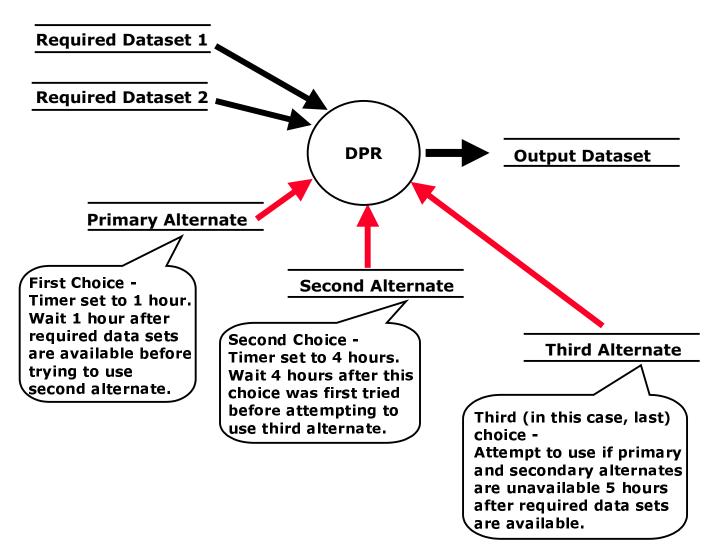
- Illustration of the Alternate Inputs and Optional Inputs Production Rules (Cont.)
 - There is a four-hour timer on the second alternate
 - If the second alternate is unavailable, the PGE waits until either the primary alternate or the secondary alternate becomes available or the four-hour timer expires, whichever occurs first
 - If the third alternate is available after the timer for the second alternate has expired, the third alternate is used
 - There is no timer on the third alternate
 - If the third alternate is not available, the PGE waits until either the primary alternate, the secondary alternate, or the third alternate becomes available, whichever occurs first
 - The PGE does not start processing until one of the alternates becomes available

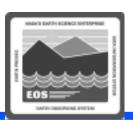


- Illustration of the Alternate Inputs and Optional Inputs Production Rules (Cont.)
 - If instead of an alternate the third input for the PGE had been defined as an optional input...
 - » The preceding scenario would have been the same, except that if neither the primary alternate, the second alternate nor the third option was available after the timers had expired, the PGE would not wait
 - » It would be scheduled for execution without the third input
 - » It would run with the two required inputs only

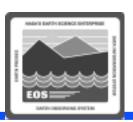
Example of Alternate Inputs Production Rule



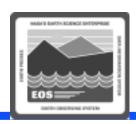




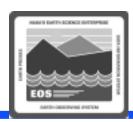
- Minimum/Maximum Number of Granules Production Rule
 - Makes it possible to specify a range of possible granules for a given input or output for a PGE
 - Inputs
 - » Minimum number of granules the PGE needs for full data coverage
 - » Maximum number of granules for the time period
 - Outputs
 - » Minimum number of outputs that the PGE is expected to produce
 - » Maximum number of outputs that the PGE is expected to produce



- Minimum/Maximum Number of Granules Production Rule (Cont.)
 - Example:
 - » PGE processes data for every 90-minute interval, has a period of 90 minutes, and takes as input a granule with a period of two hours
 - » In many instances one granule of the input will satisfy the PGE
 - » In other instances, because of the way the two-hour and 90-minute periods overlap, the PGE needs two input granules to cover the time period
 - » Minimum Number of Granules = 1
 - » Maximum Number of Granules = 2

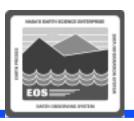


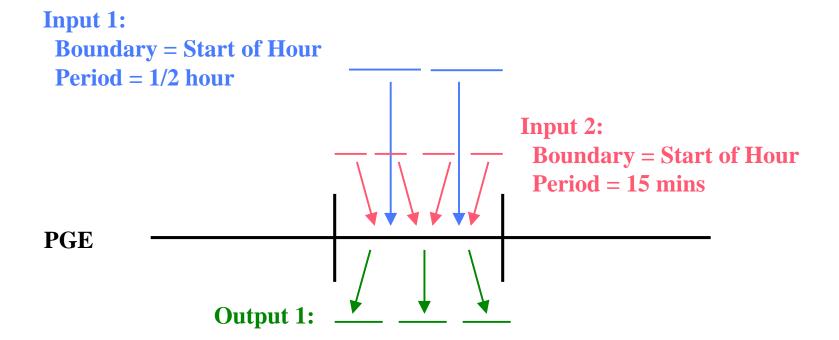
- Minimum/Maximum Number of Granules Production Rule (Cont.)
 - Different because it works for both input and output
 - PGE can request of a range of inputs (i.e., 1-10)
 - If a PGE needs at least three granules of an input…
 - » Minimum number of granules is defined as three
 - » PGE is not executed until at least three granules are available
 - Optional outputs are defined when the Minimum Number of Granules is set to zero
 - » PGE can produce none of the particular type of output and still be considered successful
 - If a PGE has a non-zero value for a Minimum Number of Granules associated with an output, and fails to produce any granules of that output type, it is marked as failed



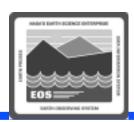
- Illustration of Minimum/Maximum Number of Granules Production Rule
 - PGE processes data related to a one-hour period and takes in both Input 1 and Input 2
 - Input 1 has a PERIOD of 1/2 hour
 - » Every PGE run requires two Input 1 granules
 - Input 2 has a PERIOD of 15 minutes
 - » There are four Input 2 granules for every PGE run
 - PGE produces three Output 1 granules for each run
 - In this case it does not produce any Output 2 granules

Example of Minimum/Maximum Number of Granules Rule

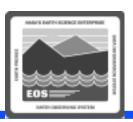




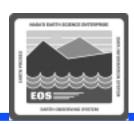
Output 2: (No Output)



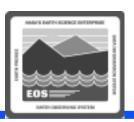
- Illustration of Minimum/Maximum Number of Granules Production Rule (Cont.)
 - Minimum and maximum values can affect each input and output
 - Input 1:
 - » If Minimum Granules is set to anything equal to or less than two for Input 1, the PGE is executed
 - » If Minimum Granules is set to three, the PGE is not scheduled (there are not enough Input 1 granules to make the minimum)
 - » If Maximum Granules is set to anything equal to or greater than two for Input 1, the PGE is executed
 - » If Maximum Granules is set to one, the PGE is not scheduled (there are too many Input 1 granules - the number exceeds the maximum that the PGE can process)



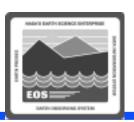
- Illustration of Minimum/Maximum Number of Granules Production Rule (Cont.)
 - Input 2:
 - » If the Minimum Granules is set to anything equal to or less than four for Input 2, the PGE is executed
 - » If Minimum Granules is set to five, the PGE is not scheduled (there are not enough Input 2 granules to make the minimum)
 - » If Maximum Granules is set to anything equal to or greater than four for Input 2, the PGE is executed
 - » If Maximum Granules is set to three, the PGE is not scheduled (there are too many Input 2 granules - the number exceeds the maximum that the PGE can process)



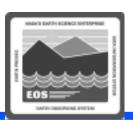
- Illustration of Minimum/Maximum Number of Granules Production Rule (Cont.)
 - Output 1:
 - » If Minimum Granules is set to anything equal to or less than three, the PGE executes successfully
 - » If Minimum Granules is set to four, the PGE is marked as failed (did not produce the expected number of output granules)
 - » If Maximum Granules is set to anything equal to or greater than three, the PGE executes successfully
 - » If Maximum Granules is set to two, the PGE is marked failed (produced too many output granules)
 - Output 2:
 - » If Minimum Granules is set to anything other than zero, the PGE is marked failed (did not produce the expected number of output granules)
 - » If Maximum Granules is set to anything equal to or greater than zero for Output 2, PGE is successful



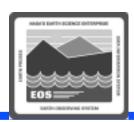
- Optional DPRs Production Rule
 - Also called the Data-Scheduled Production Rule
 - Makes the execution of a PGE subject to the availability of a "key input"
 - System generates DPRs for every possible instance of the key input data but executes only the DPRs for which data are either produced in data processing or can be acquired from the archive
 - Applies to PGEs that process certain kinds of nonroutine data
 - » Routine Data: Data that can be predicted, that come in at specific intervals and are always of a specified length
 - » Non-Routine Data: Data that cannot be predicted because they come in at random periods and/or their length is variable (Examples include an "optional" output of an upstream PGE, or data that are archived at random periods; e.g., some forms of ASTER data)



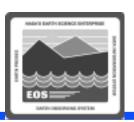
- Optional DPRs Production Rule (Cont.)
 - An Optional DPR has as its key input a non-routine data type
 - There are two sets of circumstances that lead to the scheduling of Optional DPRs:
 - » Every possible time that the input is produced in data processing (i.e., the key input is produced as an "optional" output by an upstream PGE)
 - » Whenever a new granule (of a particular data type) can be acquired from the archive (e.g., archived data that were inserted at unpredictable times)



- Optional DPRs Production Rule (Cont.)
 - Example 1: Key input is produced as an "optional" output by an upstream PGE
 - » One MODIS PGE produces a certain product only when the input data were collected during the satellite's "Day" mode
 - » A second MODIS PGE is scheduled to use the optional ("Day"-mode) product from the first MODIS PGE as its key input
 - » Second MODIS PGE is scheduled to run after every instance of the first MODIS PGE
 - » Only the DPRs that can use the optional products resulting from runs of the first MODIS PGE are executed
 - » The remaining DPRs cannot be executed because there is no input data for them

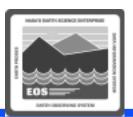


- Optional DPRs Production Rule (Cont.)
 - Example 2: Key input granules were inserted into the archive at unpredictable times
 - » ASTER routine processing
 - » DAAC ingests and archives ASTER production data from tapes supplied by the ASTER Ground Data System on a frequent but not predictable basis
 - » When creating a Production Request, the Production Planner specifies the insertion time range as opposed to the collection time
 - » Insertion time range = time period when the desired data were archived
 - » Collection time = when the satellite instrument gathered the data
 - » DPRs specifying the ASTER PGE are scheduled and executed for the data granules that were actually inserted in the archive during the specified time range



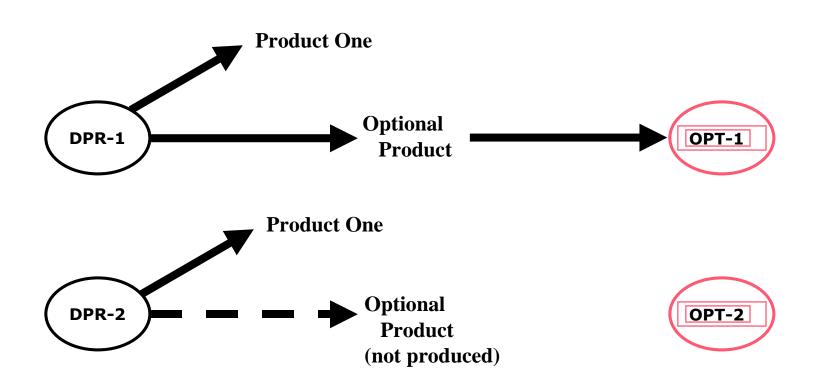
- Illustration of the Optional DPRs Production Rule
 - Two DPRs (i.e., DPR- 1 and DPR- 2) for the upstream PGE
 - Two DPRs (i.e., OPT- 1 and OPT- 2) for the PGE subject to the Optional DPRs Production Rule
 - "Optional DPRs" PGE takes as input the optional output of the upstream PGE
 - When it is executed, DPR- 1 produces the optional output, so the dependent DPR (OPT- 1) is executed
 - DPR- 2 (on which OPT- 2 depends) does not produce the optional output so OPT- 2 is not executed

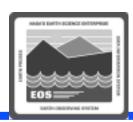
Example of Optional DPRs Production Rule



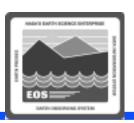
Upstream PGE

Optional DPRs

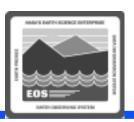




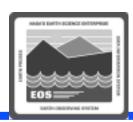
- Intermittent Activation Production Rule
 - PGE is set up to run on every *nth* instance of input data
 - To implement Intermittent Activation the Production Planner supplies the following information (via the Production Request Editor) when creating a production request:
 - » "Skip" field on the Production Request Editor: Number of DPRs to be skipped (not executed) is entered in the field
 - » "Keep" field on the Production Request Editor: Number of DPRs to keep (after skipping the specified number of DPRs) is entered in the field
 - » "Skip First" button on the Production Request Editor: Selected to skip the first DPR (not selected if the first DPR is to be run)



- Intermittent Activation Production Rule (Cont.)
 - Planning Subsystem uses the "Intermittent DPR" information from the PR to establish a pattern of execution
 - Pattern is effective for the single PR in which the "number to skip" and the "number to keep" are specified
 - » Pattern is not maintained between PRs



- Illustration of the Intermittent Activation Production Rule
 - Production Planner prepares a production request for a 14-day period, generating 14 DPRs
 - Production Planner made the following selections on the Production Request Editor:
 - » Entered "4" in the Number to Skip field
 - » Entered "1" in the Number to Keep field
 - » Did not select the Skip First button



- Illustration of the Intermittent Activation Production Rule (Cont.)
 - The following results are obtained:
 - » First DPR runs
 - » Four DPRs (second through fifth) are skipped
 - » Sixth DPR runs
 - » Four DPRs (seventh through tenth) are skipped
 - » Eleventh DPR runs
 - » Remaining three DPRs (twelfth through fourteenth) are skipped

Example of Intermittent Execution Production Rule

DAY 1:

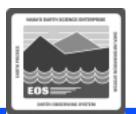
DAY 6:

DAY 11:

Dataset 1

Dataset 1

Dataset 1



QA PGE Output Dataset

QA PGE Output Dataset

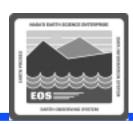
Run PGE on same data

set every five days

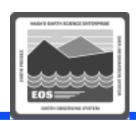
QA PGE

87

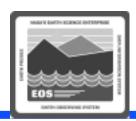
Output Dataset



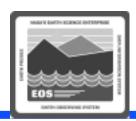
- Metadata Checks and Metadata Query Production Rules
 - Similar in definition and use
 - Both allow the PGE to specify granule-level metadata values that define whether the PGE can accept one (or more) of its inputs
 - Difference is in the results of metadata search



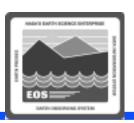
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - Metadata Checks Production Rule
 - » When PLS requests the Science Data Server to search for the input(s), the Science Data Server "checks" the metadata of all granules that match the time frame with respect to the allowed value(s)
 - » If any granule fails to match the specified value(s), the PGE is not executed
 - Metadata Query Production Rule
 - » When PLS requests the Science Data Server to search for the input(s), the Science Data Server adds to the query the PGE's desired metadata value(s)
 - » Only the granules that match the time frame of the PGE plus the granule-level metadata value(s) specified by the PGE are staged as input to the PGE
 - » If no granules are found matching the conditions and the input is not optional, the PGE is not executed



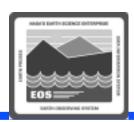
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - Example of Metadata Checks:
 - » A MODIS PGE is run when the Percent Cloud Cover of its inputs is greater than 25 percent
 - » The Metadata Checks Production Rule is used to specify the granule-level metadata value of greater than 25
 - » When the PGE is scheduled and is ready to start, two granules match the timeframe of the Production Request for the input with the Metadata Check
 - » If both granules have a Percent Cloud Cover greater than 25 percent, execution of the PGE starts and both granules are staged
 - If one of the granules has a Percent Cloud Cover of 15 percent, the PGE is not executed



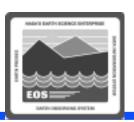
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - Example of Metadata Query:
 - » A MODIS PGE is run when as many granules as possible of one of its inputs have a QA Value = "Good"
 - » The Metadata Query Production Rule is used to specify the granule- level metadata value = "Good"
 - » When the PGE is scheduled and is ready to start, two granules match the time frame of the production request for the input with the Metadata Query
 - » If both granules have a QA Value = "Good", execution of the PGE starts and both granules are staged
 - » If one of the granules has a QA Value = "Bad", the PGE executes but with only one granule (the one with QA Value = "Good")



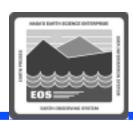
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - Metadata Checks and Metadata Query Production Rules are used in conjunction with the times specified in the Basic Temporal Production Rule or other production rules
 - Metadata Check or Query is added information that further refines what granules are sought by the PGE



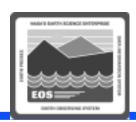
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - For past data
 - » Production Request Editor performs the Metadata Query or Metadata Check immediately
 - » Depending on what other production rules may be applicable, if no data is found to match the "query" (or data is found that does not match the "check"), the DPR fails to be created
 - For future data
 - » Metadata Query/Metadata Check is put off until the DPR Data Collection Stop Time passes plus the value defined in the ODL for QUERY_DELAY
 - » Delay allows the Metadata Query/Metadata Check to be put off until it's likely that all matching data will be present



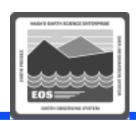
- Metadata Checks and Metadata Query Production Rules (Cont.)
 - Multi-Granule ESDTs are a special case of the Metadata Query Production Rule
 - » Used for PGE inputs or outputs when more than one granule of the same ESDT exists for the same temporal range (time period)
 - » Multi-Granule ESDT mechanism employs a metadata parameter to differentiate between "equal in time" granules



- Illustration of the Metadata Checks and Metadata Query Production Rules
 - If no Metadata Check or Query were applicable, a particular PGE would use three granules of input (i.e., Granules A through C)
 - However, in the illustration the metadata value %CloudCover is to be checked/queried
 - » Granules A through C each have a different value for %CloudCover
 - There can be more than one Metadata Check or Metadata Query on a given input
 - » A Metadata Check on %CloudCover can be combined with a Metadata Query on another parameter to further limit the input

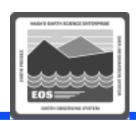


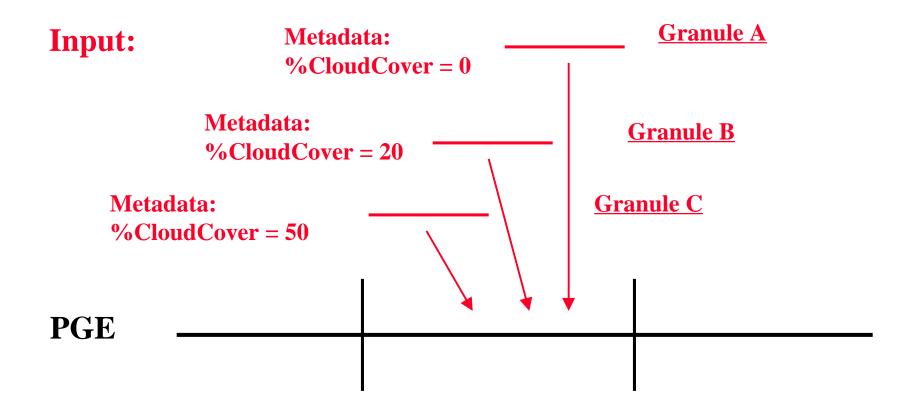
- Illustration of the Metadata Checks and Metadata Query Production Rules (Cont.)
 - The following results demonstrate differences between Metadata Checks and Metadata Query:
 - » Metadata Check of %CloudCover < 80: All three granules are acquired and the PGE is executed
 - » Metadata Query of %CloudCover < 80: All three granules are acquired and the PGE is executed
 - » Metadata Check of %CloudCover = 50: PGE is not scheduled because only one of the three granules (Granule C) meets the criterion
 - » Metadata Query of %CloudCover = 50: Granule C is found and if the PGE's Min/Max Granules parameters are set to allow one granule, that one granule is acquired and the PGE is executed

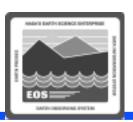


- Illustration of the Metadata Checks and Metadata Query Production Rules (Cont.)
 - The following results demonstrate differences between Metadata Checks and Metadata Query:
 - » Metadata Check of %CloudCover = 20: PGE is not scheduled because only one of the three granules (Granule B) meets the criterion
 - » Metadata Query of %CloudCover = 20: Granule B is found and if the PGE's Min/Max Granules parameters are set to allow one granule, the granule is acquired and the PGE is executed
 - » Metadata Check of %CloudCover < 20: PGE is not scheduled because only one of the three granules (Granule A) meets the criterion
 - » Metadata Query of %CloudCover < 20: Granule C is found and if the PGE's Min/Max Granules parameters are set to allow one granule, the granule is acquired and the PGE is executed

Example of Metadata Checks/Query

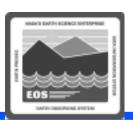




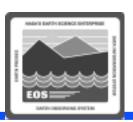


Spatial Query Production Rule

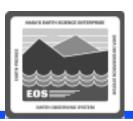
- PGE selects input(s) based on the spatial coverage of another input (called the key input)
- PDPS queries the Science Data Server for the spatial coverage of the key input
- PDPS uses key input's spatial coverage in acquiring any subsequent inputs that the PGE has requested that have the same spatial coverage
- Without specifying coordinates, PDPS can match inputs against the spatial constraint of the key input, and give to a PGE only those granules which overlap in area



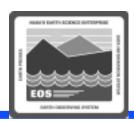
- Spatial Query Production Rule (Cont.)
 - Example:
 - » Level 0 input data for an ASTER DPR covers a small section of the Earth
 - » The PGE requires ancillary data that covers the same area to complete its processing
 - » The PGE uses the Spatial Query Production Rule to mark the geographic input as its key input
 - » The PGE specifies that the ancillary input is to be retrieved for the same spatial coverage as that of the key input
 - » When PDPS finds an input granule for the PGE, it performs a Spatial Query to acquire the ancillary input with the same spatial coverage as that of the key input



- Spatial Query Production Rule (Cont.)
 - For Release 5B Spatial Pad has been added to the Spatial Query Production Rule
 - » Spatial Pad is a means of padding the spatial constraints of the key input
 - » The specified pad is added to all sides of the key input's spatial shape
 - » All granules that intersect the expanded area are retrieved

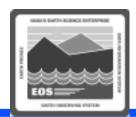


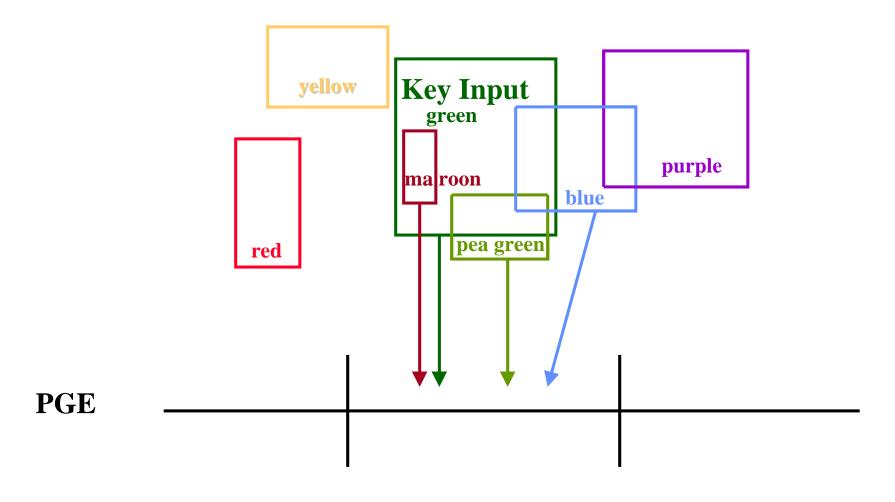
- Illustration of the Spatial Query Production Rule
 - PGE has two input types
 - » One is the key input
 - » The other type of input has granules labeled with the names of various colors
 - One granule (i.e., "green") of the key input is found
 - Spatial coordinates of the granule are retrieved
 - All inputs of the second ESDT are checked for overlap with the key input's coordinates

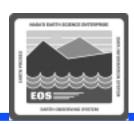


- Illustration of the Spatial Query Production Rule (Cont.)
 - Assuming that all granules relate to the same time period, the granules are evaluated as follows:
 - "yellow" granule is not retrieved as an input (spatial coordinates do not overlap with those of the key)
 - "red" granule is not retrieved as an input (same as "yellow")
 - » "blue" granule is retrieved as an input (spatial coordinates overlap with those of the key input)
 - » "maroon" granule is retrieved as an input (same as "blue")
 - » "pea green" granule is retrieved as an input (same as "blue")
 - "purple" granule is not retrieved as an input (same as "yellow")

Example of Spatial Query

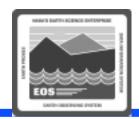


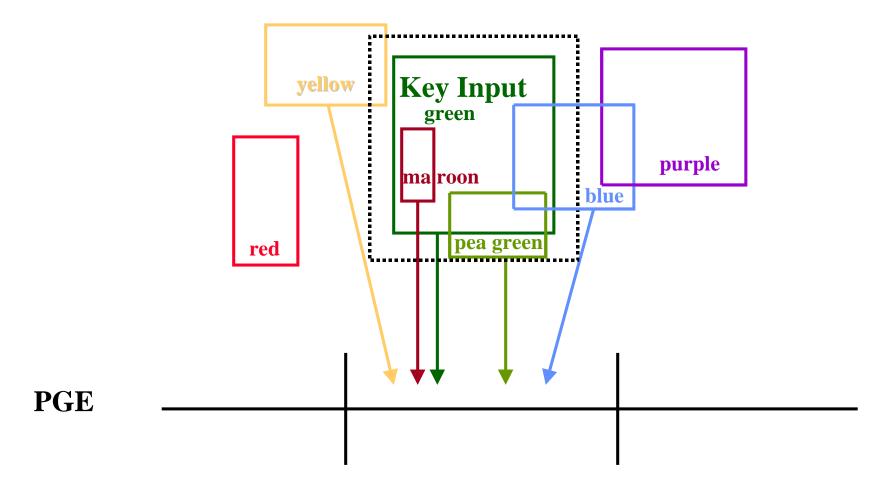


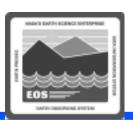


- Illustration of Spatial Query with Spatial Pad
 - Assuming that all granules relate to the same time period, the granules are evaluated as follows:
 - period, the granules are evaluated as follows:
 - "yellow" granule is retrieved as an input (spatial coordinates do not overlap with those of the key but do overlap the padded area)
 - "red" granule is not retrieved as an input (spatial coordinates do not overlap with either the key or pad)
 - » "blue" granule is retrieved as an input (spatial coordinates overlap with the key)
 - » "maroon" granule is retrieved as an input (same as "blue")
 - » "pea green" granule is retrieved as an input (same as "blue")
 - » "purple" granule is not retrieved as an input (same as "red")

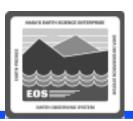
Example of Spatial Query with Spatial Pad



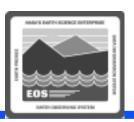




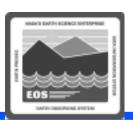
- Closest Granule Production Rule
 - PGE requests the nearest input granule from the Data Processing Request time
 - PDPS requests a search forward or backward for a specified period of time until it finds a granule that matches the request; however, ...
 - » Number of queries performed is limited
 - » Period length of the query is limited
 - Supersedes the Most Recent Granule Production Rule
 - » Allowed the search for inputs to go back only, not forward



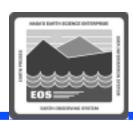
- Closest Granule Production Rule (Cont.)
 - Example:
 - » A PGE processes data at daily intervals and could use a particular type of calibration granule that would allow it to determine the nearest parameters of the instrument
 - » Although most calibration coefficients are defined as static granules, in this case there is a dynamic granule that is received about once a month
 - » The closest such granule would be optimum, so the PGE uses the Closest Granule Production Rule to search forward or backward from the time of the DPR to find the nearest calibration granule



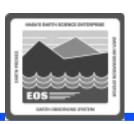
- Closest Granule Production Rule (Cont.)
 - Three values determine the period of the query
 - » Period (Offset)
 - » Direction
 - » Maximum Number of Queries



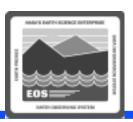
- Closest Granule Production Rule (Cont.)
 - Period (Offset)
 - » Tells the PDPS software the query duration
 - Direction
 - » Indicates whether the query goes forward (positive) or backward (negative) in time
 - » In the PIDataTypeReq table in the PDPS database, the Direction and the Period information are combined, so the sign of value (+ or -) indicates the Direction and the magnitude indicates the Period
 - Maximum Number of Queries
 - » Tells the PDPS software how many time periods (as defined by the Offset) to search (either forward or backward in time) for a matching granule



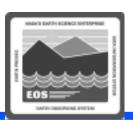
- Closest Granule Production Rule (Cont.)
 - PDPS does a Basic Temporal query before using Closest Granule to find the input
 - If the desired input is not found within the time period of the DPR, PDPS performs a query (in the specified direction) against the Science Data Server for the period defined by the offset
 - If no matching granule is found, PDPS repeats the query, going backward or forward in time by the value specified in the offset
 - If no acceptable granule has been found before the maximum number of queries is reached, PDPS fails to generate the DPR due to insufficient input data
 - special case for the forward search:
 - » when the next search interval exceeds the current time, the search stops at the current time



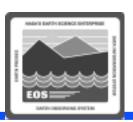
- Closest Granule Production Rule (Cont.)
 - If the DPR is planned for a future time, the DPR is created using place-holder granules and a timer is activated
 - When the current time reaches the stop time of DPR, the timer invokes the Closest Granule method to search for the actual granules, which are then used to replace the dummy granules



- Illustration of the Closest Granule Production Rule
 - PGE boundary is "start of day"
 - PGE period is one hour
 - » PGE is scheduled to run for one hour's worth of input data
 - Input period is one hour
 - » Can come in at any hour of the day
 - PGE requests one granule of input
 - Offset is 6
 - » Queries in six-hour intervals
 - Direction is backward
 - Maximum number of queries is two

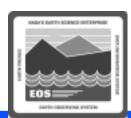


- Illustration of the Closest Granule Production Rule (Cont.)
 - PDPS performs a query for the input based on the time period of the DPR
 - » No matching data is found
 - PDPS uses the Closest Granule information to query for a six-hour period beginning six hours before the start time of the DPR
 - » Again nothing is found
 - A second Closest Granule query is performed, this one six hours before the last Closest Granule query
 - » Two granules are found that match the query
 - PDPS selects the granule that is later in time and schedules the PGE to use it as input



- Illustration of the Closest Granule Production Rule (Cont.)
 - If the Closest Granule Production Rule were used in conjunction with the Minimum/Maximum Number of Granules Production Rule, it might be possible for both granules to be selected in the previously described Closest Granule query
 - » If the example included setting the Maximum Number of Granules to two, both granules would be selected as input to the PGE

Example of Closest Granule



```
Input: Boundary = Start of Hour
Period = 1 hour
```

```
PGE:

Roundary -
```

Boundary =
Start of Day

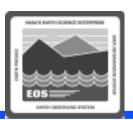
Period =

1 hour

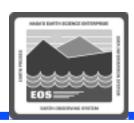
Closest Granule Query:

Query Period = -6 hours

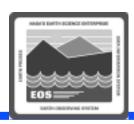
Max Queries = 2



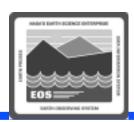
- Orbital Processing Production Rule
 - Uses the orbit of the spacecraft to determine the time period for the inputs and outputs of the PGE
 - Example:
 - » A PGE processes Level 0 data related to each orbit of the Terra satellite
 - » The Terra satellite has an orbital period of 98 minutes so the PGE is scheduled to process data for each 98minute interval
 - » Since Level 0 data are received every two hours, the data staged for the PGE include every Level 0 granule that falls within the 98-minute PGE interval
 - » Only one granule of Level 0 data is relevant to some 98-minute orbits
 - » Two granules of Level 0 data are relevant to other 98minute orbits



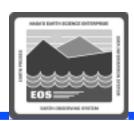
- Orbital Processing Production Rule (Cont.)
 - Uses the "period" and "boundary" concepts just like the Basic Temporal Production Rule
 - » Orbit of the spacecraft is taken into account when a PGE or its data are marked as orbit scheduled
 - When responding to a Production Request for orbitscheduled processing, PDPS determines the orbit of the satellite via information from SSI&T
 - Information in the PDPS database gives the start time and length of a particular orbit or set of orbits
 - PDPS extrapolates (or interpolates in the case of an orbit between two orbital periods stored in the database) the start and end times of the PGE that is specified in the Production Request
 - Data are sought on the basis of the derived start and stop times and the appropriate data granule(s) is/are staged before the PGE is executed



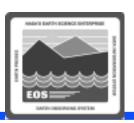
- Orbital Processing Production Rule (Cont.)
 - Orbit model is a model of the satellite's orbits that allows PDPS to perform extrapolations for the Orbital Processing Production Rule
 - » Model is a combination of a database table and a simple algorithm
 - » Database table stores Orbit Number/Orbit Start Time/Orbital Period combinations
 - » Algorithm uses the data to compute the same type of data relevant to subsequent orbits
 - » Works by extrapolation (unable to calculate data for any orbit that precedes the earliest entry in the database table)
 - » Data for the Orbit Model is specified in the Orbit Model ODL file, which is read only if the PGE requires orbital information



- Orbital Processing Production Rule (Cont.)
 - Orbital path is the path of the satellite over the Earth
 - » Number from 0-233 that indicates the region of the Earth covered by a particular orbit
 - » Because of the implementation of Orbital Path, there needs to be a mapping between the orbital path calculated by PDPS and the orbital path number expected by the PGEs
 - Runtime parameters can be set to values associated with Orbital Processing
 - The following orbital parameters can be placed under runtime parameters:
 - » Orbit Number
 - » Orbital Path Number
 - » Orbit Number within the Day
 - » Granule Number within the Orbit

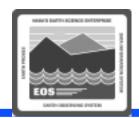


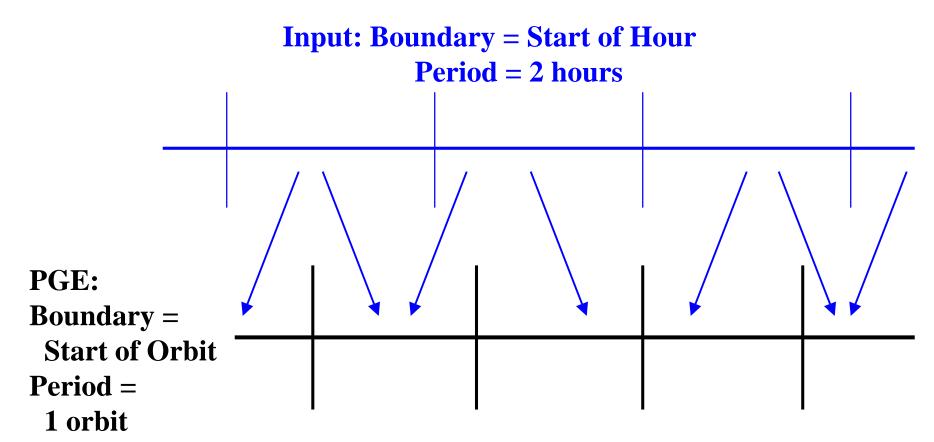
- Orbital Processing Production Rule (Cont.)
 - Orbit Number
 - » Number of the orbit (starting from zero) and continually increasing
 - Orbital Path Number
 - » Number of the path that maps to the orbit number
 - » Orbital path number is the 0-233 orbital path traversed by the satellite
 - Orbit Number within the Day (Release 5B capability)
 - » Number of the orbit within the given day
 - » Includes any orbit that starts within the given day
 - Granule Number within the Orbit (Release 5B capability)
 - » Number of the granule within a given orbit
 - » Includes any granule that starts within the given orbit

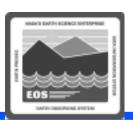


- Illustration of the Orbital Processing Production Rule
 - PGE takes a two-hour input, but is scheduled based on the orbit time and period of the satellite
 - PDPS uses the data collected at SSI&T to predict the time of the orbit and performs the query to the Science Data Server for the input based on that extrapolated or interpolated orbital time
 - Granules of input data are allocated to DPRs based on their ability to cover the DPR's time period
 - » Length of an orbit is less than the period of the twohour input
 - » Sometimes a single granule may cover the input time range of a PGE execution
 - » At other times two granules are required
 - » Rule would work equally well if the data were of a shorter period than the orbit of a satellite

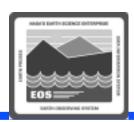
Example of the Orbital Processing Production Rule



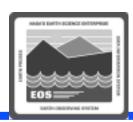




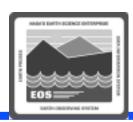
- Production Planning Considerations
 - Production Request (PR) is a template request to generate a particular data product
 - » results in a production run of the associated SCFprovided PGE
 - PR specifies a range over which the data products are to be produced or the PGEs are to be scheduled
 - » time
 - » snapshot
 - » data
 - » orbit



- Production Planning Considerations (Cont.)
 - During normal operations Production Planner should not have to add PRs to the PDPS database very frequently
 - » PR might request that the data product be produced for only a single day's data
 - » PR might request that data products be produced for every opportunity of input data for several months
 - » Early in a mission the SCF may prefer to request processing for a short time period only
 - » SCF reviews the quality of the products and notifies the DAAC of the need for any changes to the PR
 - » When the SCF has developed a good understanding of the instrument's behavior, the team may be comfortable requesting processing for months at a time

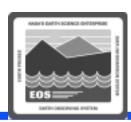


- Production Planning Considerations (Cont.)
 - DAAC operations may have operational reasons for wanting to issue processing requests for a limited time period
 - Production Planner has to balance the various considerations when determining whether or not to create or update a PR
 - Planning decisions are made on the basis of locally defined planning strategies for supporting the SCFs' data processing needs
 - Production Planner must coordinate with the Resource Planner
 - » before planning production
 - » resolve all resource allocation issues
 - » determine what resources are available for use in processing

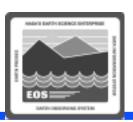


DPREP Considerations

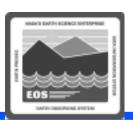
- DPREP (data preprocessing) consists of sets of PGEs that use a statistical approach to convert Level 0 (L0) attitude and ephemeris ancillary data for a particular satellite (e.g., Terra, Aqua) into SDP Toolkit native binary format without altering or modifying the scientific content of the data sets
- DPREP PGEs are supplied by ECS, unlike most PGEs
 - » Most PGEs are provided by the Science Computing Facilities that ECS supports
- Release 5B DPREP supports Terra operations and Aqua SSI&T
- Terra DPREP consists of the following three PGEs:
 - » EcDpPrAm1EdosEphAttDPREP_PGE (Step 1)
 - » EcDpPrAm1FddAttitudeDPREP_PGE (Step 2)
 - » EcDpPrAm1FddEphemerisDPREP_PGE (Step 3)



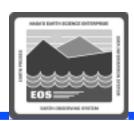
- DPREP Considerations (Cont.)
 - Sources of information on the DPREP PGEs and how to run them:
 - » 184-TP-001-001, Terra Spacecraft Ephemeris and Attitude Data Preprocessing
 - » 611- CD- 510- 001, Mission Operation Procedures for the ECS Project, Chapter 11
 - » Two files installed on the science processor hosts (e.g., e0spg01, g0spg01, l0spg01) in the /usr/ecs/MODE/CUSTOM/data/DPS directory; i.e., "DPREP_README" and "HowtoRunDPREP"



- DPREP Considerations (Cont.)
 - The DPREP PGEs process Level Zero (L0) Terra (AM- 1) spacecraft data (e.g., ESDT AM1ANC) provided by EDOS
 - The output files/granules of the DPREP PGEs are subsequently used in the processing of data from various instruments on the satellite. They provide the following types of ancillary (non-science) data:
 - » Ephemeris Spacecraft location: ephemeris (or orbit) data include: latitude, longitude, and height
 - » Attitude Orientation of the satellite, including yaw, pitch, and roll angles; and angular rates about three axes



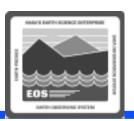
- DPREP Considerations (Cont.)
 - Step 1 DPREP
 - » Reads in two sets of AM- 1 L0 (EDOS) ancillary data set (ESDT AM1ANC) (the second set ensures that incomplete orbits in the first data set get complete orbit metadata records)
 - » Reads in ephemeris and attitude data (ESDT AM1EPHN0 and ESDT AM1ATTN0) (the last ephemeris/attitude data sets generated from a previous run of the PGE)
 - » If a short gap in the data is detected, the gap is filled
 - » PGE produces attitude (ESDTs AM1ATTN0 and AM1ATTH0) and ephemeris (ESDTs AM1EPHN0 and AM1EPHH0) data sets



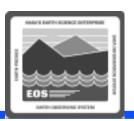
- DPREP Considerations (Cont.)
 - Step 2 DPREP
 - » Reads in both the current Flight Dynamics Division (FDD) attitude data set and the next FDD attitude data set
 - » Reads in the attitude data set it produced with its last run
 - » Output is attitude files and associated metadata files

Step 3 DPREP

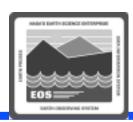
- Uses a definitive ephemeris file from FDD to replace the ephemeris data set that was generated from the L0 data by Step 1
- » Reads in the definitive ephemeris data set received from FDD and the EOS_AM1 ephemeris data and produces replacement ephemeris data sets (ESDTs AM1EPHH0 and AM1EPHN0)



- DPREP Considerations (Cont.)
 - Operationally, Steps 1 and 2 are scheduled daily and run independently of one another
 - Step 3 is scheduled and run on an as-needed basis

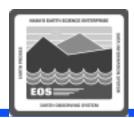


- DPREP Considerations (Cont.)
 - DPREP processing has data requirements beyond the current two-hour segment (data from the preceding and following segments are used for performing consistency checks)
 - » There is no guarantee that data from the preceding and following segments will always be available
 - » Consequently, four data processing profiles have been developed for each of the three DPREP steps to accommodate the various permutations of data availability



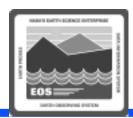
- DPREP Considerations (Cont.)
 - Profile 1 (preceding and following data available) is used for nominal DPREP operation
 - » It is the profile of each DPREP step that is run on a routine basis
 - Profile 2 (no preceding data, but following data is available) initializes DPREP's processing of a given step's ephemeris and/or attitude data stream
 - » When Profile 2 has been run on a data segment, Profile 1 assumes processing responsibility on all data segments thereafter until data dropout
 - Profile 3 (preceding data available, but no following data) processes the data segment that immediately precedes data dropout (terminates processing on a given step's ephemeris and/or attitude data stream)
 - Profile 4 is used for processing isolated data segments (not likely to be scheduled operationally)

Launching the Production Request Editor



- Production Request Editor-Associated Applications
 - Production Request Editor
 - Subscription Manager
 - Sybase SQL Server for the PDPS database

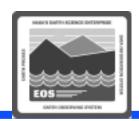
Launching the Production Request Editor (Cont.)



Procedure

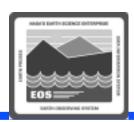
- Access the command shell
- Set the DISPLAY environmental variable
- Log in to the Planning/Management Workstation using secure shell
- Perform DCE login
- Set the ECS_HOME environmental variable if necessary
- Start the Production Request Editor GUI in the appropriate mode

PR Editor Introductory GUI



		Productio	n Request Edit	or	•
<u>F</u> ile					<u>H</u> elp
Planning	PR Edit	PR List	DPR View	DPR List	
		Product	tion Request I	Editor	
	Tab	Process			
	PR Edit:	Define/	Edit Producti	on Requests	
	PR List:	Review/S	Select/Modify	Production R	equest
	DPR View:	View/Ins	spect Data Pr	ocessing Requ	ests
	DPR List:	Review/S	Select/Inspec	t Data Proces	sing Requests
Status:					
Status.					

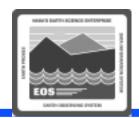
Creating a PR



Procedure

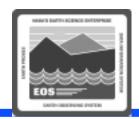
- Select the PR Edit tab of the Production Request Editor GUI
- Select the PGE to be included in the Production Request
- If applicable, specify new metadata check value
- If applicable, modify alternate input parameters
- Specify the data requirements
 - » Beginning and ending dates and times
 - » Orbits (from/to)
- If applicable, specify Intermittent Activation requirements
- Save the Production Request

PR Edit GUI



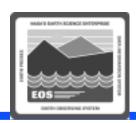
Production Request Editor	·			
<u>F</u> ile <u>E</u> dit	<u>H</u> elp			
Planning PR Edit PR List DPR View DF	PR List			
PR Name: New Origination Date (UTC) PR Type: Routine Derivation Date (UTC) PR Type: Operator Priority	: [
Satellite Name:	PGE			
Instrument Name:	PGE Parameters			
PGE Version:	Metadata Checks			
Profile Id: 0	Alternate Input Values			
	on Time			
Duration GUTC Time Outlietion Time				
Begin 02 / 13 / 2000 - 15 : 17 : 07 4	From 0			
End 02 / 13 / 2000 - 15 : 17 : 07 4	То			
Tile Id 0				
Intermittent DPR Skip 0 Keep 0	□SkipFirst			
Comment:				

PGE Selection GUI



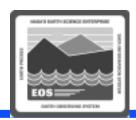
-	-			PC	E Selection				
ı	PGE Sel	ection							
H									
h	PGE Name	PGE Version	Profile	Id	Satellite	Name	Instrument	Name	
	PGE Name ACT AM1Eph AM1Eph ETS FddAtt FddAtt spatial	PGE Version syn1 2.0 2.0 syn1 1.0 syn1	Profile 1 1 2 1 1 2 1 1 1 2	Id	Satellite AM1 AM1 AM1 AM1 AM1 AM1 AM1	Name	Instrument ASTER All ASTER All ASTER All ASTER	Name	
ı	Find								
	ОК			L	Cance1			Не]р	

PGE Parameter Mappings GUI



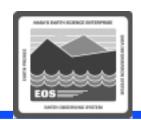
PGE Parameter Mappings		-
PGE ID: AM1Eph#2.0#01		
Parameter Name	Logical	Id Def
InitialOrbitNumber	998	0
No Previous; 1=true, 0=false.	999	ŏ
EOS_AM1 Att meta id	1255	100
EOS AM1 Ephemeris meta id	1256	115
EphemWindowSize	5000	75
MinEphemWindowSize	5001	23
AttitudeWindowSize	5002	23
MinAttitudeWindowSize	5003	11
PositionYellowLimit	5004	8.6
PositionRedLimit	5005	15.5
VelocityYellowLimit	5006	8.6
VelocityRedLimit	5007	15.5
EphLongDataGapThreshold	5008	60
AttLongDataGapThreshold	5009	60
MissingDataLimit	5023	60
MissingDataTimeLimit	5024	61.4
Limits; 0 = FALSE, TRUE otherwise	5025	0
Ephemeris Uncertainty(in std devs)	5026	0.0
Attitude Uncertainty (in std dev)	5027	0.8
Generate Att Data; 0 = FALSE, TRUE otherwise	5028	1
Generate Ephemeris Data; O = FALSE, TRUE otherwise	5029	1
Abs Max Distance from ECI center (meters)	5030	738
Abs Min Distance from ECI center (meters)	5031	650
Abs Max Velocity (ECI) (meters/sec)	5032	830
Abs Min Velocity (ECI) (meters/sec)	5033	685
Ignore Def Orbit data; 0 = FALSE, TRUE otherwise	5038	0
1st angle; 1 = X, 2 = Y, 3 = Z	5039	3
2nd angle; 1 = X, 2 = Y, 3 = Z	5040	1
3rd angle; 1 = X, 2 = Y, 3 = Z	5041	2
		₩
Find [
Override Value		
T .		
į.		
OK Apply Cancel		Help

Metadata Checks GUI



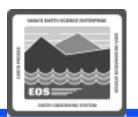
— MetaDataChecks
PGE ID: AM1Eph#2.0#01
InputDataType AM1ANC#001 AM1EPHN0#001 AM1ATTN0#001
Find
MetaDataField Operator Value Type
Find
MetaDataField: Value:
OK Apply Cancel Help

Alternate Input Values GUI



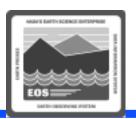
AlternateInputValues	
PGE ID: AM1Eph#2.0#01 AlternateListName Find I	
Order DataType LogicalID Timer Find DataType: Timer: Do : Do : Do /	Order
Ok Apply Cancel	Не1р

PRE File Selection Window ("Open" or "Save As")



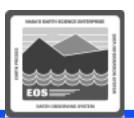
— EcPIPREditor
Select File
Filter:
Production Requests:
ACT_PR_5A ANC_begingap_PR1 ANC_begingap_PR2 ETS_PR_5A FDD_PR1 FDD_PR2
Selection
<u>i</u>
OK Filter Cancel Help

Production Request Explosion into DPRs Dialogue Box





Editing/Modifying a PR



Procedure

- Select the PR Edit tab of the Production Request Editor GUI
- Open the PR to be edited/modified
- Make the necessary edits/modifications
- Save the PR

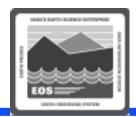
Deleting a PR



Procedure

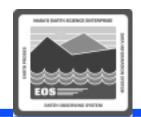
- Select the PR List tab of the Production Request Editor GUI
- Select the PR to be deleted from those listed
- Select <u>E</u>dit→<u>D</u>elete
- Select OK
- Select OK

PR List GUI



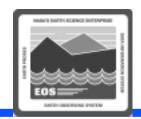
Production Request Editor	· 🗆
<u>File Edit</u>	<u>H</u> elp
Planning PR Edit PR List DPR View DPR List	
Production Requests	
PRName PGEID Priority StartTime EndTime Tim ACT_PR1 ACT#syn4#01 0 07/03/1997 00:49:00 07/03/1997 00:49:01 Col	
Find	7
Status:	

Production Request Deletion Confirmation Dialogue Box



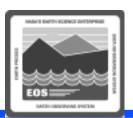


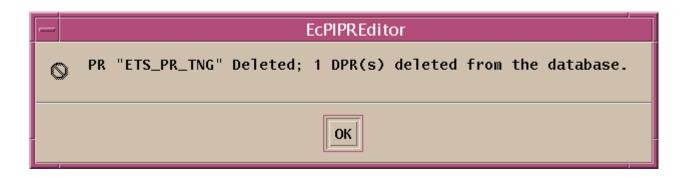
Production Request List of Orphan DPRs Dialogue



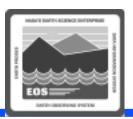
List of Orphan Dpr's
Found dependencies: Do you really want to delete all these DPRs?
Dpr Id
OK Cancel

Production Request Deletion Completed Dialogue Box



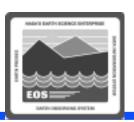


Reviewing/Deleting Data Processing Requests (DPRs)



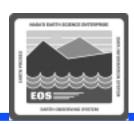
- Data Processing Requests (DPRs)
 - generated automatically by the PDPS
 - generated automatically from a PR (which specifies a PGE)
- DPR information is used by...
 - Data Processing Subsystem
 - AutoSys production scheduling software
- The Production Planner can review DPRs
- Operations personnel cannot edit DPR fields

Reviewing/Deleting DPRs (Cont.)



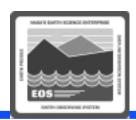
- DPR List (Production Request Editor)
 - Each line represents a DPR, i.e., a job that will be run when all data and resource needs have been satisfied
 - For each DPR the list includes...
 - » DPR identification
 - » relevant PGE
 - » name of the corresponding PR
 - » data start date and time, etc.
 - may be filtered, so that only DPRs with certain characteristics are displayed

Reviewing/Deleting DPRs (Cont.)



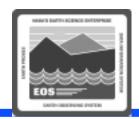
- Data concerning an individual DPR (Production Request Editor)
 - PGE parameters
 - UR File Mappings (PGE File Mappings)
 - » input and output files for a particular DPR on the PGE File Mappings GUI
 - » GUI displays one line of information for each file that may be used by or be produced by the PGE

UR File Mappings GUI



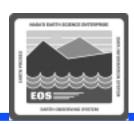
-	UR File Mappir	ngs
File Mappin	ngs	
Input Data		
LogicalId	GranuleId	StartTime(UTC) Stor
1200	AST_ANC#001L1004	01/01/1901 00:00:01 01/0
1100 1101	AST_L1B#00107031997004900000 GDAS_0ZF#00101003	07/03/1997 00:49:00 07/0 01/01/1901 00:00:01 01/0
		[N
Find		
Output Data	1	
LogicalId	GranuleId	StartTime(UTC) Stor
2000	AST_09T#00107031997004900000	
Find		
ОК		НеТр

DPR List GUI



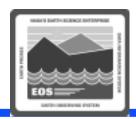
Production Request Editor	
<u>File Edit</u>	<u>l</u> e1p
Planning PR Edit PR List DPR View DPR List	
Production Request:	
Filter Data Processing Requests	
DPRId PGEId PRName TileId DataStartTime(UTC) DataStopTime(UTC) Find Status:	

Reviewing/Deleting DPRs (Cont.)



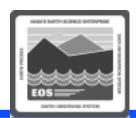
- Procedure (Reviewing DPRs)
 - Select the Data Processing Request List by clicking on the DPR List tab
 - Select a Production Request from the list on the option button
 - Select a DPR to be reviewed from the list of Data Processing Requests, then click on the DPR View tab
 - Select File → Open from the pull-down menu
 - Select the DPR to be reviewed from the list of DPRs
 - Review the selected DPR
 - » Click on the PGE Parameters... button to view the PGE parameters associated with the DPR
 - » Click on the PGE File Mappings... button to view the UR file mappings (PGE input and output data)

DPR View GUI



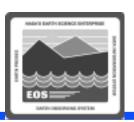
Produ	uction Request Editor	-
<u>F</u> ile <u>E</u> dit		<u>Н</u> е1р
Planning PR Edit PR Li	st DPR View DPR List	
,	All Times In UTC	
Data Processing Request Iden	tification	
DPR Name:	PR Name:	
Origination Date:		
Originator:		
PGE ID: Data Start Time: Data Stop Time:	PGE Parameters PGE File Mappings	
Request Data and Status		
Predicted Start		
Time:	Priority:	
Actual Start	_	_
Time:	Status:	

DPR File Selection GUI



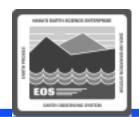
— EcPIPREditor
Select File
Filter:
Data Processing Requests
AM1Eph#2.007310400TS1
Selection
OK Filter Cancel Help

Reviewing/Deleting DPRs (Cont.)



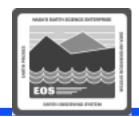
- Procedure (Deleting a DPR)
 - Select DPR List tab on the Production Request Editor GUI
 - Select the appropriate Production Request from the list on the option button
 - Select the DPR to be deleted from the list of Data Processing Requests
 - Select <u>E</u>dit→<u>D</u>elete
 - Select OK
 - Select OK

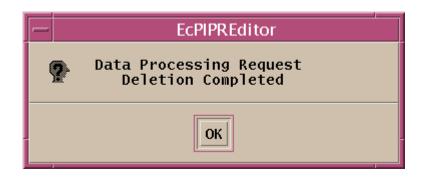
DPR Deletion Confirmation Dialogue Box



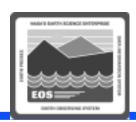


DPR Deletion Completed Dialogue Box



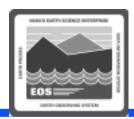


Reviewing/Deleting DPRs (Cont.)



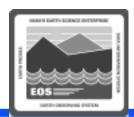
- Deleting or Aborting an On-Demand Processing Request
 - The Planning Subsystem detects changes in the status of ASTER on-demand processing requests
 - » Whether the changes were made by the system or by operations personnel
 - PLS is not able to determine why operations personnel have canceled or aborted a request
 - Consequently, if it is necessary to cancel or abort an on-demand processing request, notify User Services personnel
 - » So they can send an e-mail message to the requester explaining why the request was canceled or aborted

Launching Planning Workbench-Related GUIs



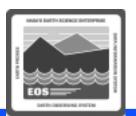
- Launching the Production Strategies GUI
 - Software applications associated with the Production Strategies GUI
 - » Production Strategies GUI
 - » Sybase SQL Server for the PDPS database
 - Production Strategies are high-level sets of priorities that the Production Planner makes available to the Planning Workbench for determining the priorities and preferences in the processing of DPRs
 - Values included in the selected strategy are read by the Planning Workbench when prioritizing the DPRs in a production plan

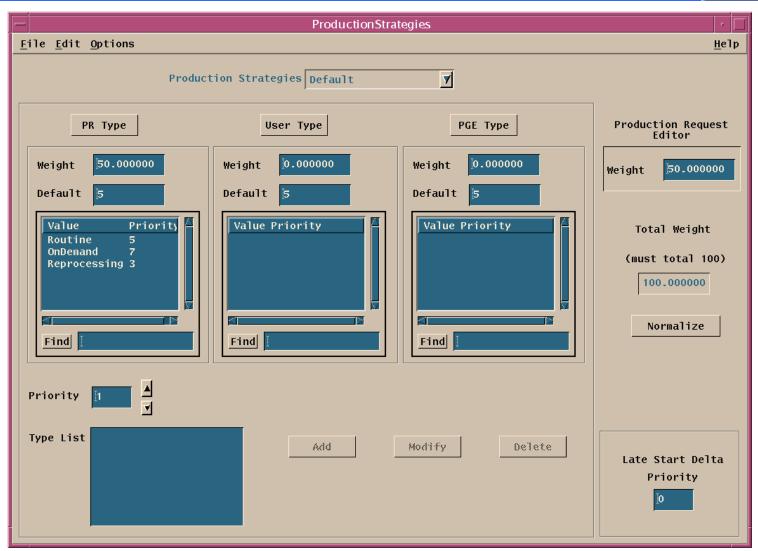
Launching Planning Workbench-Related GUIs (Cont.)



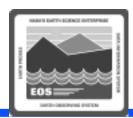
- Launching the Production Strategies GUI: Procedure
 - Access the command shell
 - Set the DISPLAY environmental variable
 - Log-in to the Planning/Management Workstation using secure shell
 - Set the ECS_HOME environmental variable if necessary
 - Start the Production Strategies GUI in the appropriate mode

Production Strategies GUI



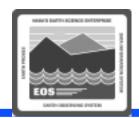


Launching Planning Workbench-Related GUIs (Cont.)



- Planning Workbench-Related Applications
 - System Name Server
 - Message Handler
 - Resource Model
 - Planning Workbench
 - Production Timeline
 - Production Strategies
 - Sybase SQL Server for the PDPS database

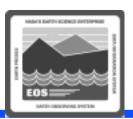
Launching Planning Workbench-Related GUIs (Cont.)

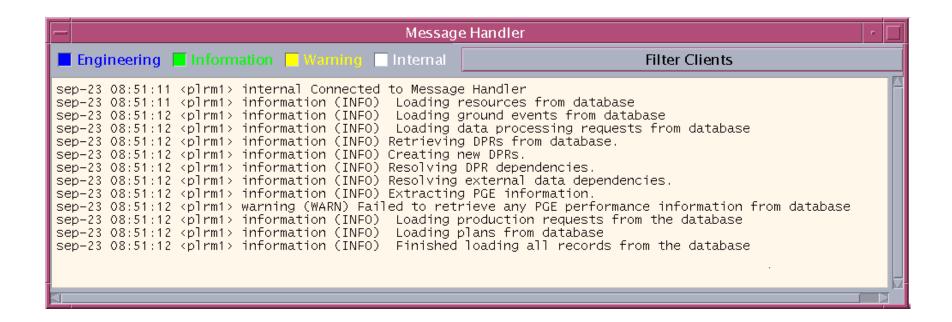


- Launching Planning Workbench-Related GUIs: Procedure
 - Access the command shell
 - Set the DISPLAY environmental variable
 - Log-in to the Planning/Management Workstation using secure shell
 - Set the ECS_HOME environmental variable if necessary
 - Start the Planning Workbench GUI in the appropriate mode

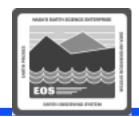
NOTE: Normally, the EcPlAllStart script is used to start all processes. But if the number of DPRs in the PDPS database is very high (~4000), the EcPlSomeStart script is used to start the underlying processes. Then additional scripts are used to start the Planning Workbench GUI and the Timeline GUI.

Message Handler GUI





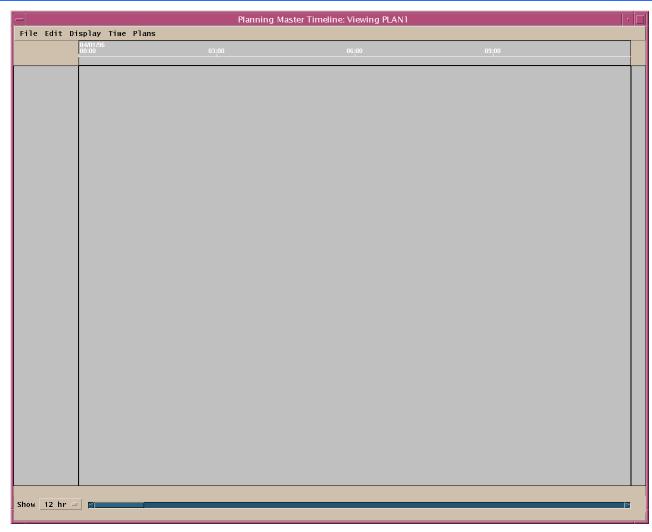
Planning Workbench



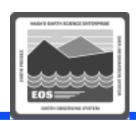
Planning Workbench		-
<u>F</u> ile <u>O</u> ptions		<u>H</u> elp
Plan Name: orbitTest2_9		
Status: ACTIVE		
Strategy: Default =		
Baseline		
Activate Rollover Time:		
Comments:		
T T T T T T T T T T T T T T T T T T T		
Production Requests		_
Unscheduled:		
NAME	PRIORITY	
ACT_PR_TNG ETS_PR_TNG	2 2	
		V
schedule: 🔻 unschedule: 🛕		
Scheduled:		
NAME	PRIORITY	
ACT_PR1	250	
		V
Prioritize Refresh		

Planning Timeline GUI





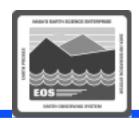
Creating a New Production Plan

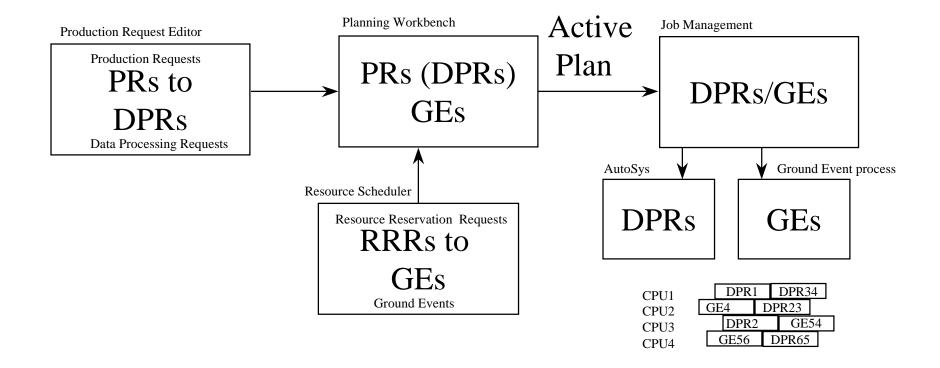


Planning Workbench

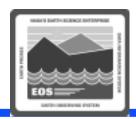
- is used for creating a plan for production data processing at the DAAC
- provides the means by which the Production
 Planner selects specific PRs whose DPRs are to be run
- provides a forecast of the start and completion times of the jobs based upon experience in running the PGEs during the SSI&T process
- when the generated plan is "activated" through the Planning Workbench, information in the plan is transferred to Job Management in the Data Processing Subsystem
- Job Management creates and releases jobs into the Platinum AutoSys tool, where production processing is managed

Creating a New Production Plan: Planning Workbench





Creating a New Production Plan (Cont.)



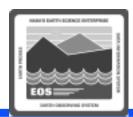
Monthly plans

- developed for the coming month and one or two months in advance
- produced, reviewed, updated, published and distributed approximately two weeks before the beginning of the month
- used to establish a baseline against which production targets can be measured

Weekly plans

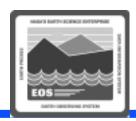
- produced, reviewed, updated, published and distributed approximately five days before the beginning of the coming week
- used to produce a baseline for comparison of planned vs. actual production results

Creating a New Production Plan (Cont.)



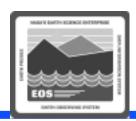
- Daily plan or schedule
 - produced each day for the next processing day
 - developed from the current weekly plan
 - » adjusted to reflect the actual processing accomplished and the actual resources available at the time the daily schedule is generated

Production Strategy



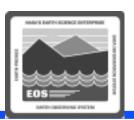
- High-level sets of priorities that the Production Planner makes available to the Planning Workbench for determining the priorities and preferences in the processing of DPRs
- Production Strategies work on two levels:
 - Updating lists of DPR attributes so that each value an attribute can have is tied to a particular priority
 - Changing the weight that each attribute's priority is given
- In addition, weight is given to the priority selected by the user who entered the request

Production Strategy (Cont.)



- Total weights assigned to PR Type, User Type, PGE Type and Production Request Editor [Priority] must equal 100
- The values included in a strategy are read by the Planning Workbench to prioritize the DPRs in a plan
- Late Start Delta can be used to increase the priority of all jobs that have been waiting in the Production Queue for more than a day

Production Strategy: Calculating Priority for a DPR



PR TYPE

Weight .45

On Demand 10
Routine 6
Reprocessing 4
Default 5

PGE

Weight .20

MODIS 01 5
MOD09:L2G 3
MOD09:L3 6
MODIS 02 5
Default 5

The operator can also change the weights given to each list according to the DAACs current production priorities

DPR id:

MOD09:L2G 060199 14 1234

User Type: Scientist

PGE:

MOD09:L2G Routine request

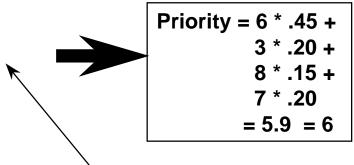
Tile 14 Cluster id: 4

Priority (Production Request Editor): 7

USER TYPE

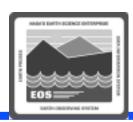
Weight	15
Operator	5
DAAC Manag	•
Researcher	10
Scientist	8
Default	5
Delault	5

Production Request Editor
Weight .20



The operator can change any weight or priority on any strategy list.

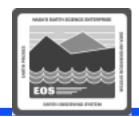
Defining a Production Strategy



Procedure

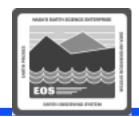
- Select priorities for the values for each of the following three DPR attributes (as needed):
 - » PR Type
 - » User Type
 - » PGE Type
- Type weights for the preceding three DPR attributes (as needed)
- Type a weight in the Production Request Editor field
- Click on the Normalize button
- Type delta priority for Late Start Delta (if needed)
- Save the Production Strategy

Production Strategies "Open" Window



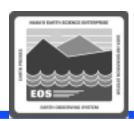
_	Open
	Production Strategies
	Default Training
	File Selection
	Ok Cancel Help

Production Strategies "Save As" Window



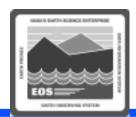
	Save As	
Produc	tion Strategi	ies
Defaul Traini		
Save A		
Train	ingį	
Ok	Cancel	Help

Creating a New Production Plan



- Production Planner creates a plan for production data processing at the DAAC
 - selects specific PRs whose DPRs are to be run
 - selects PRs from two lists of PRs
 - » list of available "Unscheduled" PRs
 - » list of "Scheduled" PRs
 - uses arrow buttons to move PRs between lists until the "Scheduled" list contains the desired set of PRs that define the new plan

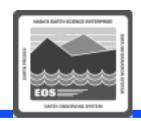
Creating a New Production Plan (Cont.)



Procedure

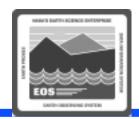
- Select applicable Production Strategy
- Move PRs between the Unscheduled and Scheduled lists
- Save the plan
- Activate the plan if applicable
- Save the plan as a baseline plan if applicable
- To quit the Planning Workbench GUI: File → Exit
- After quitting the Planning Workbench GUI, type the command to shut down the Message Handler, System Name Server, and Resource Model
- Verify that the Message Handler, System Name Server, and Resource Model have shut down

Planning Workbench "New Plan" GUI



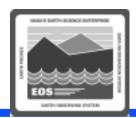
_	New Plan
listLabel	
CHECKOUT PLAN_ETS Checkout Plan DPREP_Err4 DPREP_Err5 Spatial Plan 1 Spatial Plan 2 DPREP_Err6 DPREP_Err7	CANDIDATE CANDIDATE CANDIDATE CANDIDATE CANDIDATE CANDIDATE CANDIDATE CANDIDATE ACTIVE
Plan Names:	
Ok Apply	Cancel Help

Planning Workbench Priority Popup Window



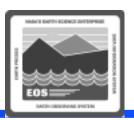
_	Priority_popup
P	oduction Request(s) priority:
	OK Cancel Help

Planning Workbench Confirm Activation Dialogue Box





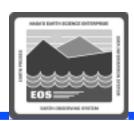
Reviewing a Plan Timeline



Production Plan Timeline

- graphic, timeline-oriented depiction of a production plan
- displays a set of processing equipment, arranged along the left side of the GUI
- displays some period of time across the top edge of the GUI
- bars on the timeline represent either...
 - » execution of DPRs on processing equipment over a period of time
 - » resource reservations for non-production-related purposes (also called "ground events")
- ground events include such activities as testing, preventive maintenance, or system upgrades

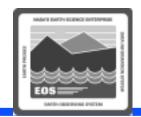
Reviewing a Plan Timeline (Cont.)



Procedure

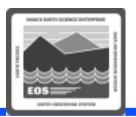
- Adjust the Production Planning Timeline window size and the view of the timeline as necessary
- Select a different plan to be viewed if necessary
- Adjust the time scale (start and end dates and times) as necessary
- Adjust the time span if desired
- Adjust the resources to be displayed on the timeline as necessary
- Adjust timeline color coding if desired/necessary

Planning Timeline Open Plan Window



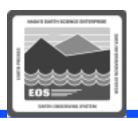
— Open Plan	
Items	
A2	
ASt1	
02	
02_Plan	
03	
05PLAN	
ORBIT6	
OrbitPl 5	
Selection	
Serection	1
OK Anniu Canaal Usin	
OK Apply Cancel Help	

Planning Timeline Plan Window Edit Window



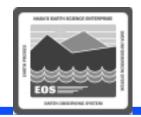
— plan window edit		
Plan Win Start: 13 FEB 2000 19:57:44		
Plan Win End : 13 FEB 2000 19:57:44		
OK Apply Cancel		

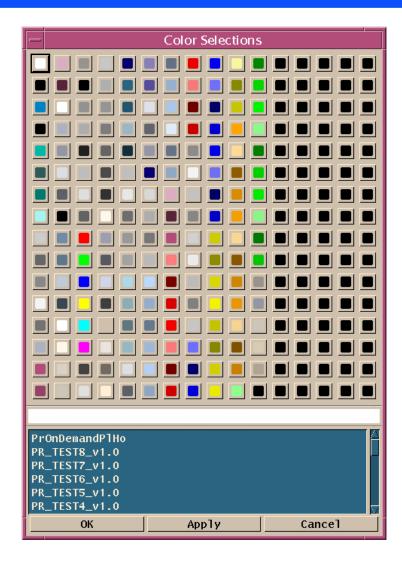
Planning Timeline: Resource Edit Window



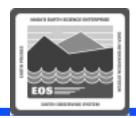
–	resource edit	
Available Resources		Viewed Resources
CPU_t1spg01_vc_5 CPU_t1spg01_vc_6 CPU_t1spg01_vc_7 CPU_t1spg01_vc_8 CPU_t1spg01_vc_9 CPU_t1spg01_vc_10 CPU_t1spg01_vc_11 CPU_t1spg01_vc_12 CPU_t1spg01_vc_13 CPU_t1spg01_vc_14	Add Del	
ОК	Apply	Cancel

Planning Timeline Color Selections Window



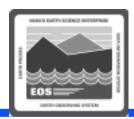


Resetting/Cleaning the PDPS Database



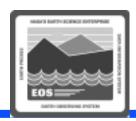
- Saving and Resetting the PDPS Database
 - Scripts used in saving and resetting the database
 - » reset db
 - » list db
 - » save db
 - Saving the database (using save_db) produces one ASCII file (with a ".dat" extension) for each database table
 - Resetting the database involves clearing ("wiping out") the data in the database tables and loading values from a specified "saved database" file

Resetting/Cleaning the PDPS Database (Cont.)



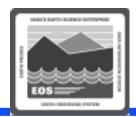
- Saving and Resetting the PDPS Database (Cont.)
 - It is important to take into consideration the consequences of resetting the database before performing the procedure
 - » Removes and replaces all Resource Definitions, Resource Reservations (Ground Events), Production Requests, Data Processing Requests, and Production Plans
 - » Coordinate with all affected parties, including the Resource Planner, Production Planner, and Production Monitors concerning the effects of resetting the database as well as its after-effects (e.g., recreating resource definitions, resource reservations, and production requests)

Resetting/Cleaning the PDPS Database (Cont.)



- Saving and Resetting the PDPS Database (Cont.)
 - Whenever the PDPS database is reset (not including database cleanup using the EcPIDbClean script) it is also necessary to remove all PLS subscriptions in the Communications Subsystem (CSS) Subscription Server database
 - Production personnel can remove the subscriptions using the Subscription Server GUI (EcSbSubServerGUI) if they have access to the GUI
 - » Otherwise, they can request User Services personnel to remove the subscriptions
 - » As a result of removing the subscriptions, no subscription notification will come through for existing jobs in the newly loaded database
 - » Only new jobs generated using the Production Request Editor will work normally with regard to subscriptions

Saving/Resetting the PDPS Database

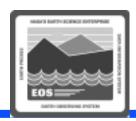


Procedure

NOTE: It is important to log in as a user who has "write" permission in the saved_dumps directory; otherwise it will not be possible to save database contents

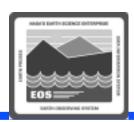
- Log in to the Planning/Management Workstation using secure shell
- Set the ECS_HOME environmental variable if necessary
- If desired, save the database
- If desired, obtain a listing of saved databases
- If desired, reset the database

Resetting/Cleaning the PDPS Database (Cont.)



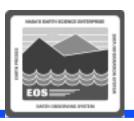
- EcPIDbClean script in the /usr/ecs/MODE/CUSTOM/utilities directory on the Planning/Management Workstation
 - Cleans up some tables in a PDPS database
 - Tries to delete applicable records in the following order:
 - » Data Processing Requests based on timeStamp and completionState(SUCC_DEL)
 - » Production Requests that have no associated DPRs
 - » Dynamic data granules that are not used by any DPR or by the Data Processing Subsystem
 - » PGEs that are marked with a deleteFlag
 - » Science Software that has no associated PGE
 - Compiles a list of data granules that are not deleted because the Data Processing Subsystem needs to use them

Cleaning the PDPS Database



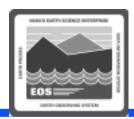
Procedure

- Log in to the Planning/Management Workstation using secure shell
- Set the ECS_HOME environmental variable if necessary
- Start the EcPIDbClean script using the following arguments:
 - » MODE
 - » dbserver (name of the PDPS database server)
 - » dbuser (user name for logging in to isql)
 - » dbpassword (password for isql login)
 - » months (number specifying the removal of records that are older than that number of months)
 - » days (optional) (number that specifies the removal of records that are older than that number of days)

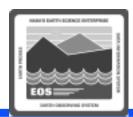


Troubleshooting:

process of identifying the source of problems on the basis of observed trouble symptoms

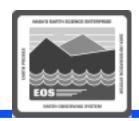


- Problems with production planning can usually be traced to...
 - some part of the Planning Subsystem
 - problems in other ECS subsystems, including (but not necessarily limited to):
 - » Data Processing Subsystem (DPS)
 - » Data Server Subsystem (DSS)
 - » Interoperability Subsystem (IOS)
 - » Communications Subsystem (CSS)

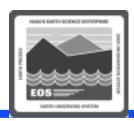


Troubleshooting table

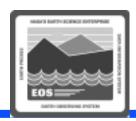
- describes actions to be taken in response to some common Production Planning problems
- if the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy



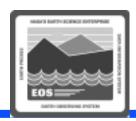
Symptom	Response
Unable to log in to the Planning Subsystem host (e.g., g0pls01).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	Ensure that the DISPLAY variable was set properly. [For detailed instructions refer to the applicable procedure, either Launching the Production Request Editor or Launching Planning Workbench-Related GUIs (previous sections of this lesson).]
Error message indicating that SNS (System Name Server) and/or Resource Model is/are in use using the selected Application ID.	 Use another Application ID if working in a different mode from the person using the selected Application ID. If working in the same mode as the other user, coordinate use of Planning applications with the other user and/or the System Administrator. [For detailed instructions refer to the procedure for Launching Planning Workbench-Related GUIs (previous section of this lesson).]
Error message associated with the Production Request Editor.	Refer to Table 2, Production Request Editor User Messages (adapted from the corresponding table in 609-CD-510-002, Release 5B Operations Tools Manual for the ECS Project).
Error message associated with the Production Strategies GUI.	Refer to Table 3, Production Strategy User Messages (adapted from the corresponding table in 609-CD-510-002, <i>Release 5B Operations Tools Manual for the ECS Project</i>).



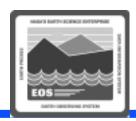
Symptom	Response
Error message associated with the Planning Workbench.	Refer to Table 4, Planning Workbench User Messages (adapted from the corresponding table in 609-CD-510-002, <i>Release 5B Operations Tools Manual for the ECS Project</i>).
Production Request fails (DPR generation fails).	 Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," perform the procedure for Handling a Failure to Generate DPRs (subsequent section of this lesson). Retry generating DPRs by resaving the Production Request. [For detailed instructions refer to the section on Editing/Modifying a Production Request (previous section of this lesson).]



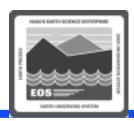
Symptom	Response
PR or DPR deletion hangs.	 Ensure that enough time has passed to allow DPR deletion (deleting a DPR can require as much time as creating a DPR). Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (especially Job Management server and Deletion Server – list in Table 5) are "up." (Both the Job Management Server and Deletion Server are called to clean up all PDPS database tables associated with the DPR or PR.) If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," check for a database lock or resource lock in the PDPS database. [For detailed instructions refer to the section on Responding to PR or DPR Deletion that Hangs (subsequent section of this lesson).]



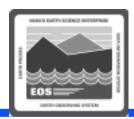
Symptom	Response
DPR deletion fails.	 Ensure that enough time has passed to allow DPR deletion (deleting a DPR can require as much time as creating a DPR). Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (especially Job Management server and Deletion Server – list in Table 5) are "up." (Both the Job Management Server and Deletion Server are called to clean up all PDPS database tables associated with the DPR or PR.) If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," check the Deletion Server Debug log (EcDpPrDeletionDebug.log). [For detailed instructions refer to the section on Responding to DPR Deletion that Fails (subsequent section of this lesson).]



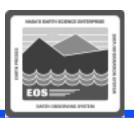
Symptom	Response
DPR scheduling fails (DPR is not passed to Data Processing).	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," perform the procedure for Handling a DPR Scheduling Failure (subsequent section of this lesson). 4. If necessary, delete the affected DPRs. [For detailed instructions refer to the section on Creating a New Production Plan (previous section of this lesson).] 5. If affected DPRs were deleted, recreate the DPRs. [For detailed instructions refer to the section on Editing/Modifying a Production Request (previous section of this lesson).] 6. If affected DPRs were recreated, create a new production plan. [For detailed instructions refer to the section on Creating a New Production Plan (previous section of this lesson).]



Symptom	Response
Other problems.	 Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," check the log files (e.g., EcPIPREditor.ALOG, EcPIPREditorDebug.log, EcPIWb.ALOG,
	EcPlWbDebug.log, EcPlTl.ALOG) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]

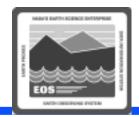


- Handling a Failure to Generate DPRs
 - Checking the Production Request Editor ALOG File
 - Using ISQL to check database tables
 - Checking the PDPS database for causes of failure to generate DPRs
 - Determining whether DPR explosion fails because Production Request Editor does not query DSS for data
 - Checking the Production Request Editor debug file for evidence of metadata queries
- Responding to PR or DPR Deletion that Hangs
 - Checking for database deadlocks
 - Checking for resource locks in the PDPS database



- Responding to DPR Deletion that Fails
- Handling a DPR Scheduling failure
 - Responding to a "DPR Validation Failed" error
 - Responding to an "information (INFO) Production Request {Production Request Id} has unschedulable DPR {DPR Id}" error
- Checking Log Files
- Checking Database Connections

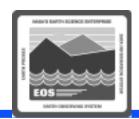
Launching the AutoSys GUI Control Panel



Production Processing Applications

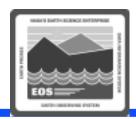
- Subscription Manager
- Job Management
- Data Management
- Execution Management
- PGE Management
- Deletion Server
- AutoSys/AutoXpert
 - » Event Processor
 - » Event Server
 - » AutoSys GUIs
 - » AutoXpert GUIs

Launching the AutoSys GUI Control Panel



- Production Processing Applications (Cont.)
 - QA Monitor
 - Sybase SQL Server

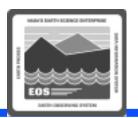
Launching the AutoSys GUI Control Panel (Cont.)



Procedure

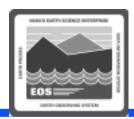
- Access the command shell
- Set the DISPLAY environmental variable
- Log-in to the Queuing Server host using secure shell
- Set the ECS_HOME environmental variable if necessary
- Source the appropriate file
- Start AutoSys in the appropriate mode

AutoSys GUI Control Panel



□ AutoSys				- <u>-</u>
	Ops Console	Job Definition	Calendars	Monitor/Browser
	HostScape	JobScape	TimeScape	Exit

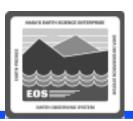
Configuring AutoSys Screens/Displays



AutoSys/AutoXpert

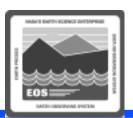
- production scheduling tool
- supports the operational activities surrounding production processing in the PDPS
- assists with the following activities (among others):
 - » job monitoring
 - » job scheduling
 - » fault notification
 - » job restart
 - » determining the effects of failure of a DPR
 - » determining the cause and actions to be taken due to the failure of a DPR

Configuring AutoSys (Cont.)



- AutoSys/AutoXpert (Cont.)
 - displays DPRs as job boxes
 - recognizes the following three categories of jobs:
 - » box jobs
 - » command jobs
 - » file-watcher jobs

Configuring AutoSys (Cont.)

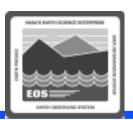


Box job

- collection of other jobs
- provides an organizational structure for a group of jobs that should be run within the same time period
 - » performs no processing action

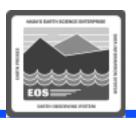
Command job

 "command" can be a shell script, the name of an executable program, a file transfer, or any other command that causes execution of a UNIX command on client machine

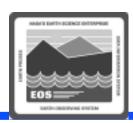


File-watcher job

- functions similarly to a command job
- monitors the creation and size of a particular operating system file
- allows AutoSys to know the status of external files that are needed in the processing of command jobs or box jobs



- AutoSys Job Starting Parameters
 - Date and time scheduling parameters are met
 - Starting Conditions specified in the job definition evaluate to "true"
 - For jobs in a box, the box must be in the RUNNING state
 - The current status of the job is not ON_HOLD or ON_ICE
- AutoSys finds all jobs that may be affected by any change in the truth of the starting parameters and determines whether or not to start the jobs



- AutoSys Jobs (ECS)
 - Each DPR generated by the Planning Subsystem defines a box job for AutoSys
 - Every DPR/box job is composed of seven command jobs that run in the following order:

» Allocation (EcDpPrEM)

» Staging (EcDpPrDM)

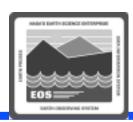
» Pre-processing (EcDpPrEM)

» Execution (EcDpPrRunPGE)

» Post-processing (EcDpPrEM)

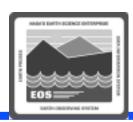
» Insertion (EcDpPrDM)

» Deallocation (EcDpPrEM)

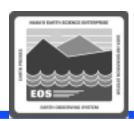


ECS Job Names

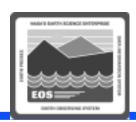
- Indicate the mode in which the DPR was generated and the stage of processing
- Example:
 - » AM1Eph#2.012302200TS2
 - » AM1Eph#2.012302200TS2A
 - » AM1Eph#2.012302200TS2S
 - » AM1Eph#2.012302200TS2P
 - » AM1Eph#2.012302200TS2E
 - » AM1Eph#2.012302200TS2p
 - » AM1Eph#2.012302200TS2I
 - » AM1Eph#2.012302200TS2D



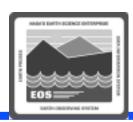
- ECS Job Names (Cont.)
 - The first job name in the list is a DPR/box job-level name
 - » Last three characters of the DPR/box job-level name (i.e., TS2) indicate the mode in which the DPR was generated
 - » Last four characters of the remaining (command) job names in the list indicate the mode (i.e., TS2) and the stage of processing
 - » Job name ending in "A" is the allocation job; job name ending in "S" is the staging job; etc.



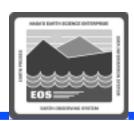
- Each of the following ECS command jobs is dependent on successful completion of the command job that precedes it:
 - Staging
 - Preprocessing
 - Execution
 - Insertion
 - Deallocation
- Allocation depends on the box having started
- Post-Processing depends on Execution having completed (not necessarily "successful," just done)
 - If execution failed, post-processing handles failed PGE processing



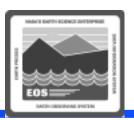
- DPR (box job) may be dependent on the successful completion of some other DPR
 - usually involving a need for the output of another DPR as input
- Effects of DPR dependencies
 - dependent DPRs are "held" by AutoSys until their data availability subscriptions are fulfilled
 - subscription manager software (in the PLS) informs the DPS to release the AutoSys jobs after all data subscriptions for a given DPR are fulfilled
 - DPS (as monitored by the AutoSys Job Scheduling engine) runs the PGEs and associated jobs as the resources required for the tasks become available
 - procedure continues until all DPRs scheduled for the day have completed



- There is an optimum number of jobs for an AutoSys instance
 - Allocated among the active modes (e.g., OPS, TS1, TS2) according to their level of activity
 - Job Management server in DPS
 - » determines the number of jobs in the PDPS database associated with Job Management's operating mode
 - » compares the number with the maximum allowable for the mode
 - Maximum number of jobs is specified in the Job Management configuration file
 - » value of the DpPrAutoSysMaxJobs variable in the EcDpPrJobMgmt.CFG file
 - Job Management deletes successfully completed jobs (in Job Management's mode only) from AutoSys to make room for jobs in the processing queue



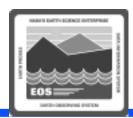
- DAAC Production Monitor uses AutoSys/ AutoXpert for...
 - transferring/deleting/suspending/resuming DPRs as required (e.g., requests, resource problems, input data schedule problems, special events, schedules replans, etc.)
 - monitoring and providing processing status upon request



Configuring AutoSys Runtime Options

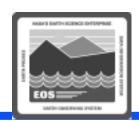
- Refresh Interval
 - » determines how often the View Region will be updated
- Ping Interval
 - » defines how often the connectivity will be evaluated
- Hang Time
 - » specifies the length of time jobs will continue to be displayed within a machine after they have completed running
- Inches/Hr
 - » indicates how much information is displayed on the screen

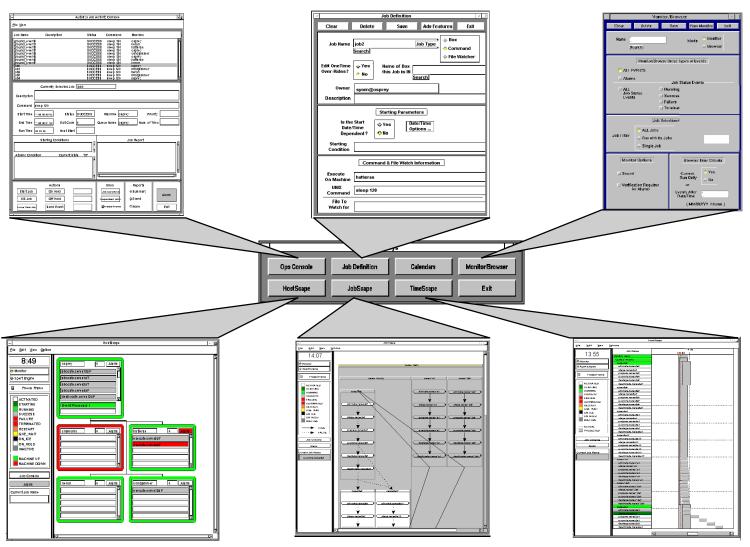
Configuring AutoSys (Cont.): Configuring Runtime Options



- Click on either the HostScape, TimeScape, or JobScape button to display the corresponding AutoXpert GUI
- Select Options → Edit Runtime Options from the pull-down menu to display the Runtime Options dialog box
- Enter new values for the runtime options as necessary
 - » refresh interval
 - » ping interval
 - » hang time
 - » number of inches/hour
- Apply the modifications

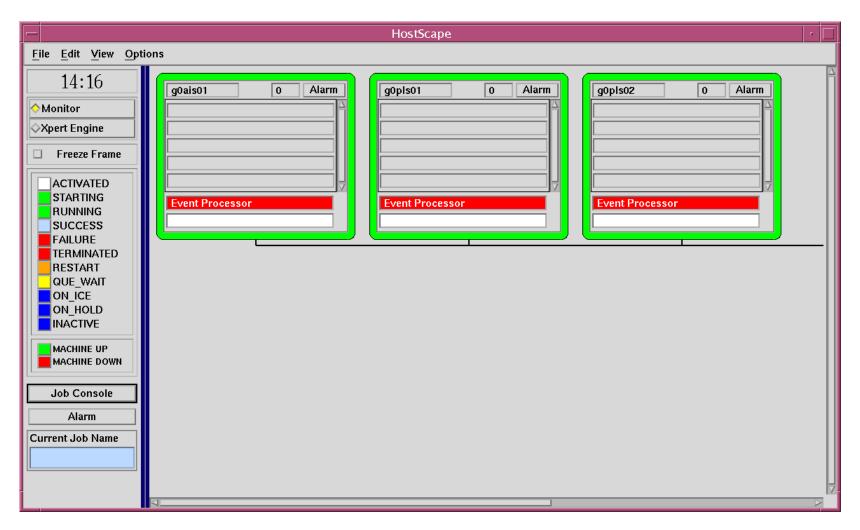
AutoSys GUI Control Panel



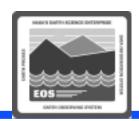


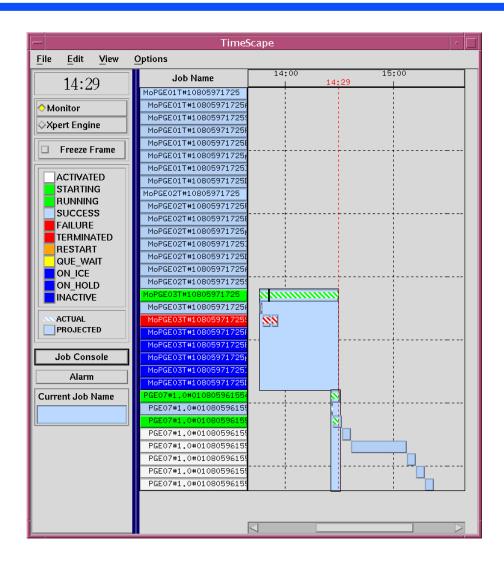
AutoXpert HostScape GUI



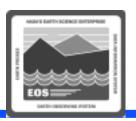


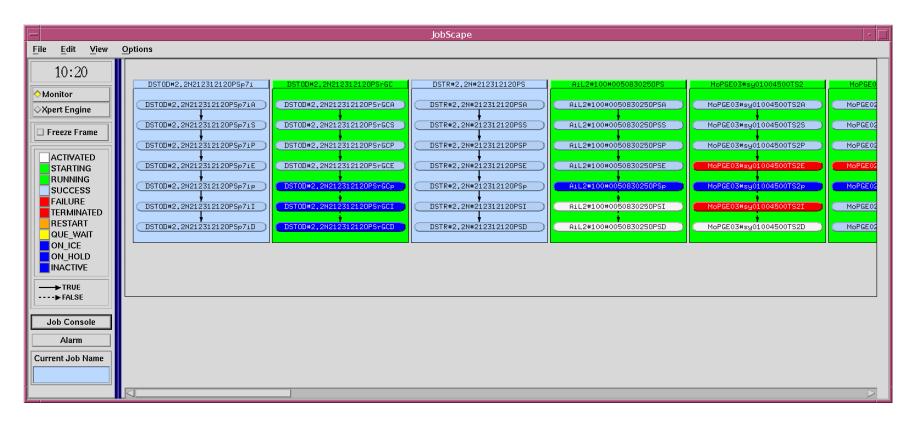
AutoXpert TimeScape GUI



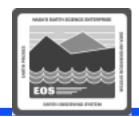


AutoXpert JobScape GUI



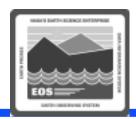


AutoXpert JobScape GUI Runtime Options Dialogue Box



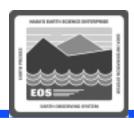


Configuring AutoSys (Cont.): Selecting Jobs to be Displayed



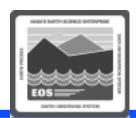
- Jobs can be selected on the basis of the following criteria:
 - Job Name
 - Job Status
 - Machine
- Default values
 - All Jobs
 - All Statuses
 - All Machines

Configuring AutoSys (Cont.): Selecting Jobs to be Displayed



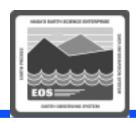
- Select an AutoXpert GUI
- Select View → Select Jobs to Display
- For the Select by Name option select all jobs by clicking on the All Jobs button; to select jobs by pattern matching, enter the appropriate characters/wild cards
- To select all job statuses click on the All Statuses button; to select jobs by status click on the appropriate Select by Status toggle buttons
- To select jobs on all machines click on the All Machines button; to select jobs by machine click on the applicable machine name(s) in the Select by Machine area
- Select OK (or Apply)

Job Selection Dialogue Box



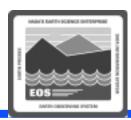
Select by Name	Select by Status	Select by Machine		
☐ All Jobs	All Statuses	☐ All Machines		
Box Hierarchies	☐ Starting	t1spg01		
Show Number of Levels [all	☐ Running	t1sps02		
Name Matching Patterns	☐ Success	t1pls02		
Trume watering ratterns	☐ Failure			
Lookup	☐ Terminated			
Lookup	☐ Restart			
Lookup	☐ Que Wait			
Lookup	☐ Activated			
Lookup	☐ Inactive			
Lookup	☐ On Hold			
Lookup	☐ On Ice	V		
ОК	Apply	Cancel		

Configuring AutoSys (Cont.): Setting the Current Job



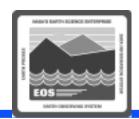
- Setting the current job causes the job name to be displayed in the Current Job Name field in the Control Region of the AutoXpert GUI
 - Subsequently clicking on the Job Console button on the AutoXpert GUI causes the Job Activity Console GUI (also known as the Ops Console GUI) to be displayed with information concerning the current job
- There are two methods for setting the current job:
 - Click on the name of a job displayed on an AutoXpert GUI
 - Set the current job using the AutoXpert GUI pulldown menu

Configuring AutoSys (Cont.): Setting the Current Job

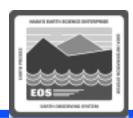


- Select an AutoXpert GUI
- Select View → Set Current Job
- Type the *jobname* or a portion of the *jobname* in the Filter field
 - » The asterisk (*) wildcard character can be used for entering a partial job name
- Click on the Filter button
- Select (highlight) the job to be designated the "current job" from the jobs listed in the Jobs field
- Select OK (or Apply)

Set Current Job Dialogue Box



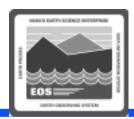
	Set Cu	rrent Job	
Filter			
*			
Jobs			
Selected Jo	ob		
50,000,000			
ОК	Apply	Filter	Cancel



Configuring Hardware Groups

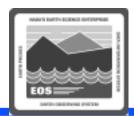
- makes it easier to monitor the hardware associated with a particular function (e.g., testing, training, or a certain type of processing)
- default group is "All Machines"
- Production Monitor defines a specific set of machines to be monitored as a group
 - » must know which machines are to be included in the group
 - » should devise a useful name for the group

Configuring AutoSys (Cont.): Configuring Hardware Groups



- If necessary, log in to the Queuing Server host using secure shell
- If necessary, source the appropriate set-up file
- Type vi xpert.groups. Auto SysInstance
- Using vi editor commands create/modify hardware groups as necessary
- Press the Esc key
- Save the xpert.groups. AutoSysInstance file
- Launch AutoSys/HostScape
- Select View → Select Machine Group from the pulldown menu

Configuring AutoSys (Cont.): AutoSys Hardware Group File



groupname: Training

g0pls02

g0sps06

g0spg01

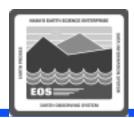
groupname: SSI&T

g0ais01

g0sps06

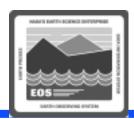
g0spg01

Reviewing Hardware Status, DPR Dependency, etc.

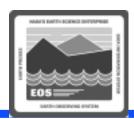


Reviewing Hardware Status

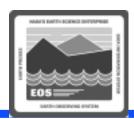
- Hardware status is displayed on the HostScape GUI
- Production Monitor can determine the following conditions (among others):
 - » status of processors
 - » condition of the AutoSys queue
 - » whether any processors are overloaded while others are idle
 - » whether there are any system problems



- Reviewing Hardware Status (Cont.)
 - HostScape displays jobs on a machine-by-machine basis
 - » which AutoSys server/client machines are up and active
 - » which jobs are running or have recently run on each machine
 - HostScape can display hardware status in real-time

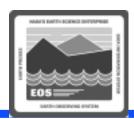


- Click on the HostScape button on the AutoSys GUI Control Panel
- Review the Control Region to identify the color codes for the status of the machines
- Review the machine type in the View Region
- Review the machine boxes in the View Region to determine the status of individual machines
- Review the Alarm indicating buttons of individual machines in the View Region
- Review the machine connection status in the View Region

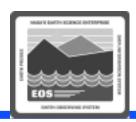


- Changing the Hardware Status View
 - View Options provide three methods of viewing hardware status:
 - » normal
 - » global
 - » zoom

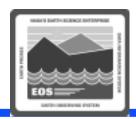
Reviewing Hardware Status etc. (Cont.): Changing Status Views



- Select a machine in the View Region by clicking on its name, then select...
 - » first Select View Level...
 - » then Global View
- Select a specific machine by clicking on its name, then select Zoom in Machine
 - » zoom view is displayed
 - » table listing relevant data is displayed
- Select Dismiss
 - » global view is displayed
- Select View → Select View Level then select Normal View
 - » normal view is displayed



- Reviewing DPR Dependencies
 - DPR dependencies are displayed on the JobScape GUI
 - » presents a Pert-like view of job processing from a logical (or job dependency) point of view
 - » depicts all job types; i.e., command jobs, box jobs, and file-watcher jobs
 - » depicts the nesting of jobs within boxes and the dependencies between jobs.
 - » can be used for monitoring job flow in real-time
 - » allows the Production Monitor to identify potential problems before they become actual problems
 - AutoSys defines job status in the terms listed in the table
 - » different states are color-coded



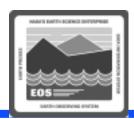
Job States

- Activated (white)
- Starting (green)
- Running (green)
- Success (light blue)
- Failure (red)
- Terminated (red)
- Restart (orange)
- Que_Wait (yellow)
- On_lce (dark blue)
- On_Hold (dark blue)
- Inactive (dark blue)



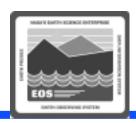
- ON_HOLD vs ON_ICE
 - ON_HOLD
 - » Lose a Turn. (Can start anytime from stop point.)
 - ON_ICE
 - » Go to Jail. Do not pass GO. Do not collect \$200. (ALL conditions must be reset before starting again.)

Reviewing Hardware Status etc. (Cont.): DPR Dependencies



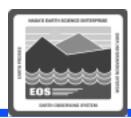
- Click on the JobScape button on the AutoSys GUI Control Panel
- Review the Job Display to determine the status (color-coded) of DPRs
- Review the Job Display to determine the types of jobs
- Select a job (for which descendants are to be determined)
- Review the job's descendants
- Select Show Children from the pop-up menu
- Select Show All Descendants from the pop-up menu
- Select Hide All Descendants from the pop-up menu

Reviewing Hardware Status etc. (Cont.): Changing JobScape View



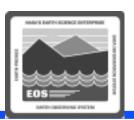
- Changing the view affects the level of detail displayed in the View Region of the GUI
- The view can be changed in two ways
 - Simply clicking with the right mouse button on the name of a job displayed on an AutoXpert GUI and selecting the desired option from the pop-up menu
 - » Show Children
 - » Show All Descendants
 - » Hide All Descendants
 - » Show Job Arrows
 - » Hide Job Arrows
 - » Show Box Arrows
 - » Hide Box Arrows
 - Using the View pull-down menu
 - » Additional options can be selected

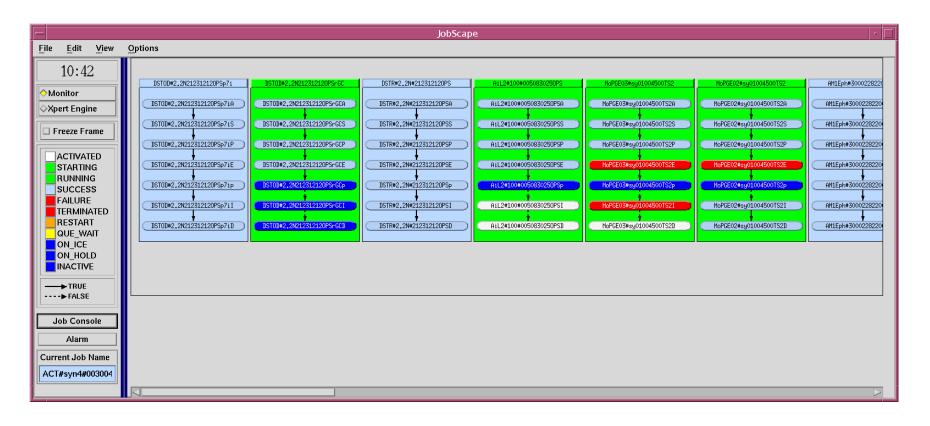
Reviewing Hardware Status etc. (Cont.): Changing JobScape View



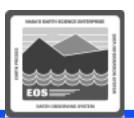
- Select View → Set View from the pull-down menu
- Select the desired option from the pull-down menu
 - » Normal Text View
 - » Small Text View
 - » No Text <u>View</u>
 - » Show Arrows
 - » Hide Arrows
 - » View by Id
- Select View → Set Display Levels
- Select the desired option from the pull-down menu
 - » All is the default type of view

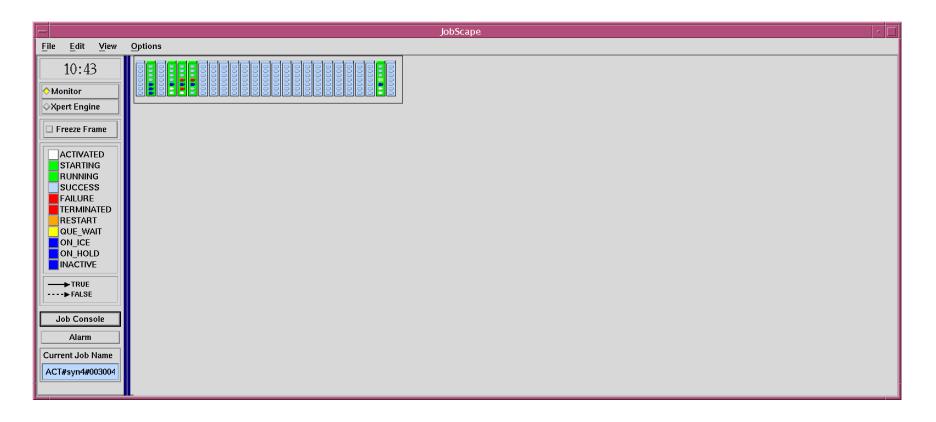
JobScape GUI "Small Text" View



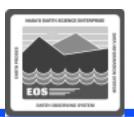


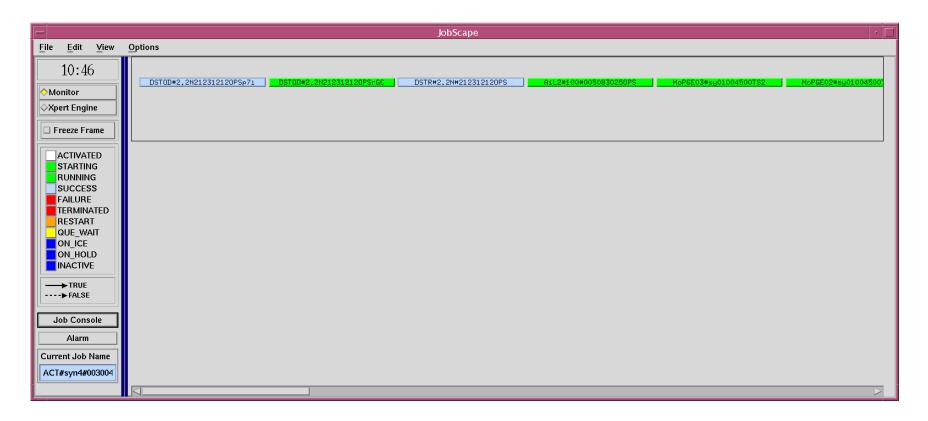
JobScape GUI "No Text" View



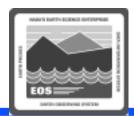


JobScape GUI "One Level" View



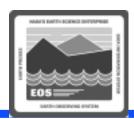


Reviewing Hardware Status etc. (Cont.)



- Reviewing the DPR Production Timeline
 - The DPR Production Timeline is displayed on the TimeScape GUI
 - » presents a Gantt-like view of a job processing from a temporal (time-related) point of view
 - » depicts all job types; i.e., Command Jobs, Box Jobs, and File Watcher Jobs
 - » depicts the nesting of jobs within boxes
 - » depicts the duration of time it will take for jobs to complete
 - » used for monitoring job flow in real-time

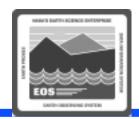
Reviewing Hardware Status etc. (Cont.): DPR Production Timeline



Procedure

- Select TimeScape
- Review a job's descendants by clicking on the job
 - » Select Show Children from the pop-up menu
 - » Select Show All Descendants from the pop-up menu
 - » Select Hide All Descendants from the pop-up menu

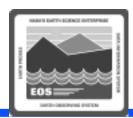
Reviewing Hardware Status etc. (Cont.): Procedure



Good vs Bad

Projected		
Actual		
		Looks Good!
Projected	_	
		Actual
		Trouble!

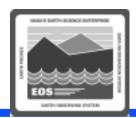
Reviewing Hardware Status etc. (Cont.)



Reviewing Alarms

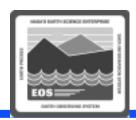
- Alarms indicate problems with job processing
 - » failure of job processing
 - » database problem
 - » communication problem
 - » hardware or software failure
 - » some other error in the data processing system
- Production Monitor reviews alarms using the AutoSys Alarm Manager
 - » view alarms as they arrive
 - » provide a response to an alarm
 - » change alarm status

Reviewing Hardware Status etc. (Cont.)



- Reviewing Alarms (Cont.)
 - Production Monitor can configure the Alarm
 Manager to display certain types of alarms only
 - » type of alarm
 - » alarm state
 - » time of the alarm

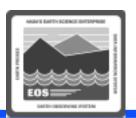
Reviewing Hardware Status etc. (Cont.): Reviewing Alarms



Procedure

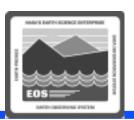
- Click on the Ops Console button on the AutoSys GUI Control Panel)
- Click on the Alarm button to display the Alarm Manager GUI
- Configure alarm selection as described in the procedure for Configuring Alarm Selection
- Click on an alarm in the Alarm List
- Click the Response edit box and type in a response, if desired
- Update the Alarm State by clicking on the appropriate radio button
- Click on the Apply button
- Repeat steps as necessary to review and update multiple alarms€

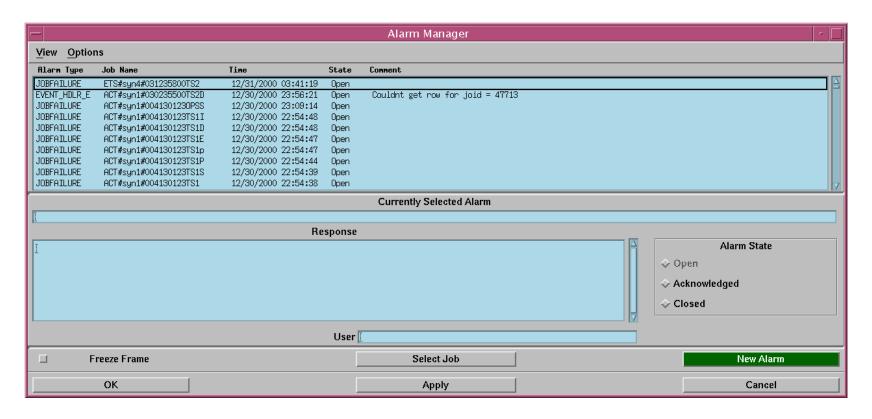
Job Activity Console (OPS Console)



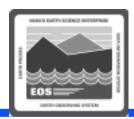
Job Activity Console					
File View Options					
Job Name Description State	atus Command Machine	- I m			
		Ш			
		Ш			
Currently Selected Job	Machine Time				
Description Command					
Start Time Status	Machine Priority	7			
End Time Exit Code	Queue Name Num. Of Tries				
Run Time Next Start					
Starting Conditions	Job Report				
Atomic Condition Current State T/F					
	7 1	D			
Actions	Show Reports				
Start Job On Hold Jobs Complete	Job Definition				
Kill Job Off Hold Jobs Waiting	g Dependent Jobs 💠 Event				
Force Start Job Send Event Client Tool	☐ Freeze Frame				

Alarm Manager GUI





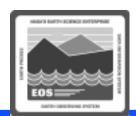
Reviewing Hardware Status etc. (Cont.): Alarm Selection



Procedure

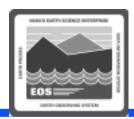
- Select View → Select Alarms from the pull-down menu to display the Alarm Selection GUI
- Click on the desired alarm(s) in the Select by Type alarm list; to select all types of alarms, click on the All Types button
- Click on the All States button to select all alarm states; to select alarms by state click on whichever of the Select by State toggle buttons properly describe(s) the state(s) to be selected
- Click on the All Times button to select all times; to select alarms by time type the starting date/time and ending date/time in the applicable fields
- Apply selections

Alarm Selection GUI



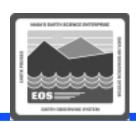
_	Alarm Selection						
_	Select by Type	Select by State	Select by Time				
	All Types	☐ All States	☐ All Times				
	AUTO_PING CHASE	Open	From Date	<u>[</u> 02/20/2000	(MM/DD/[YY]YY)		
	DATABASE COMM	Acknowledged	From Time	<u>11:22</u>	(hh:mm)		
	DB_PROBLEM	☐ Closed	To Date	02/20/2000	(MM/DD/[YY]YY)		
	DB_ROLLOVER	_ 5,000	To Time	[11:22	(hh:mm)		
	ок		Apply		Cancel		

Reviewing Hardware Status etc. (Cont.)



- Specifying Job Selection Criteria
 - Production Monitor reviews job activities using the AutoSys Job Activity Console
 - AutoSys Job Selection GUI is used for...
 - » specifying (filtering) jobs the Production Monitor will review
 - » setting the criteria for displaying jobs by name, status and/or machine

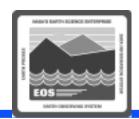
Specifying Job Selection Criteria



Procedure

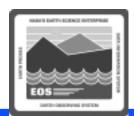
- Click on the Ops Console button on the AutoSys GUI Control Panel
- Choose View → Select Jobs from the pull-down menu to display the Job Selection GUI
- For the Select by Name option select all jobs by clicking on the All Jobs button
- To select all job statuses click on the All Statuses button; to select jobs by status click on the appropriate Select by Status toggle buttons
- To select all machines click on the All Machines button; to select individual machines click on the machines in the list in the Select by Machine area
- Click on the desired order in the Sort Order area
- Apply the selections

Job Selection GUI



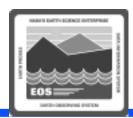
Select by Name	Select by Status	Select by Machine				
All Jobs	All Statuses	All Machines				
Ob Name	☐ Starting	g0spg01				
<u> </u>	Running	g0sps06 g0ais01				
♦ Box Name	☐ Success					
Box Levels	☐ Failure					
[all	Terminated					
	☐ Restart					
	Que Wait					
	Activated					
	☐ Inactive					
	☐ On Hold					
	☐ On Ice					
	Sort Order					
♦ Start Time	Job Name 🔷 Machine Na	me				
♦ End Time	Job Status 🔷 Unsorted					
ОК	Apply	Cancel				

Reviewing Hardware Status etc. (Cont.)



- Reviewing Job Activities
 - Production Monitor reviews job activities using the AutoSys Job Activity Console
 - » primary interface for monitoring all jobs that have been defined for AutoSys
 - » based on criteria defined using the Job Selection GUI

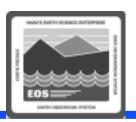
Reviewing Hardware Status etc. (Cont.): Reviewing Job Activities



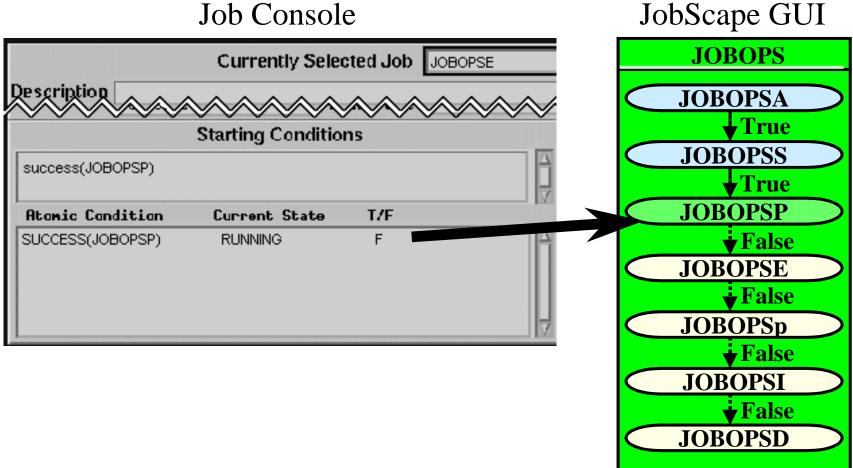
Procedure

- Click on the Ops Console button on the AutoSys GUI Control Panel
- Generate a list of jobs using the procedure for Specifying Job Selection Criteria
- Review the job data in the Job List region of the Job Activity Console
- Click anywhere on a job row to have detailed information for that job displayed
- Review the data in the Currently Selected Job region of the display
- Review the data in the Starting Conditions region of the display
- In the Reports list click on the type of report to be reviewed then review the report

Reviewing Hardware Status etc. (Cont.): Procedure

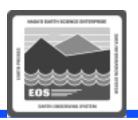


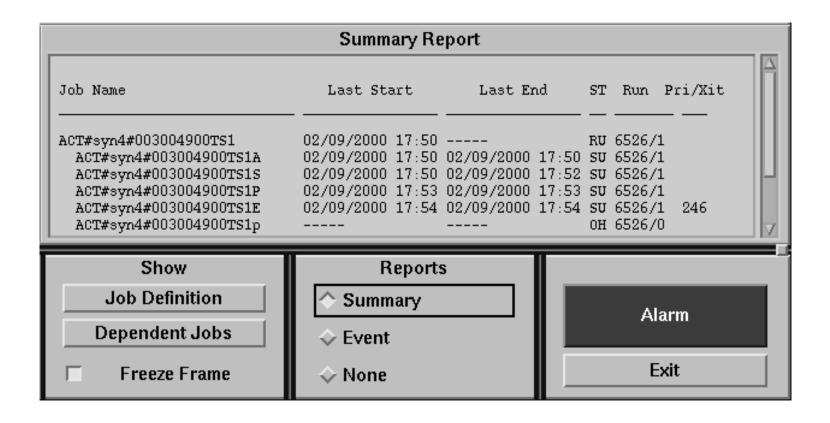
Nuke'm



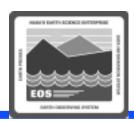
271

Example of A Summary Report on the Job Activity Console



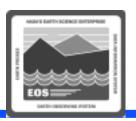


Modifying Job Status



- Methods for Modifying Job Status
 - Production Monitor may need to modify a particular job in any of the following ways:
 - » start the job
 - » kill the job
 - » force the job to start
 - » place the job on hold
 - » take the job off hold
 - Three methods for making those types of modifications to a particular job:
 - » Buttons in the Actions region of the Job Activity Console (Ops Console)
 - » Menu accessed by clicking the right mouse button on the relevant job name on JobScape or TimeScape
 - » AutoSys Send Event GUI

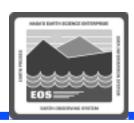
Modifying Job Status



Methods for Modifying Job Status

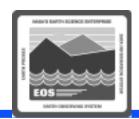
- In AutoSys terms a control action such as starting or killing a job is accomplished by sending an "event" to the job
- An event is basically a message
- For example, clicking on the Start Job button on the AutoSys Job Activity Console begins the process by which AutoSys sends a "start" message to the Currently Selected Job

Modifying Job Status



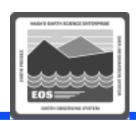
- Methods for Modifying Job Status (Cont.)
 - In addition to the previously mentioned modifications to job status, the buttons in the Actions region of the Job Activity Console (Ops Console) allow the Production Monitor to generate the following types of reports:
 - » Jobs Completed
 - » Jobs Waiting
 - Menu accessed using the right mouse button on one of the AutoXpert GUIs allows the Production Monitor to initiate either of the following actions (in addition to the previously mentioned modifications to job status):
 - » Put the job on ice
 - » Take the job off ice

Jobs Completed Report

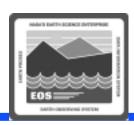


DPR ID	R ID COMPLETION STATE		
ACT#syn1#00413	30123OPS	SUCCESS	250
AM1Eph#2.00731	10420OPS	SUCCESS	250
BTS#syn1#00413	0123OPS	SUCCESS	250
ETS#syn1#00413	0123OPS	SUCCESS	250

Jobs Waiting Report

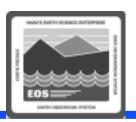


DPR ID	COMPLI	ETION STATE	PRIORITY	PREDICTED START TIME
AM1Eph#2.0073106	520OPS	CQ_HOLD	250	10/27/98 18:44:01.000
AM1Eph#2.0073108	320OPS	CQ_HOLD	250	10/27/98 18:44:16.000
AM1Eph#2.0073110	20 OPS	CQ_HOLD	250	10/27/98 18:44:31.000
AM1Eph#2.0073112	20 OPS	CQ_HOLD	250	10/27/98 18:44:43.000

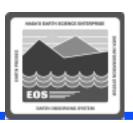


- Send Event GUI allows the Production Monitor to initiate any of the following actions:
 - » Start the job
 - » Kill the job
 - » Force the job to start
 - » Place the job on hold
 - » Take the job off hold
 - » Change the job's status
 - » Change the job's priority
 - » Put the job on ice

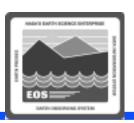
- » Take the job off ice
- » Stop the daemon (stop the Event Processor in an emergency)
- » Set a global value
- » Send a signal concerning the job
- » Make a comment (for example, why a job start was forced)



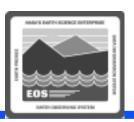
- Guidelines for Reporting Unsuccessful Completion of On-Demand Jobs
 - Under any of the following circumstances involving an on-demand job notify User Services of the problem in accordance with the applicable local policy
 - » Job is killed
 - » Job terminates and cannot be restarted
 - » A failpge granule is created
 - The DAAC is obliged to send an e- mail message to the requester of an unsuccessful on-demand job to explain why the request cannot be fulfilled



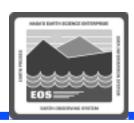
- Guideline for Putting Jobs "On Ice" or "On Hold"
 - Ensure that the job to be put either "on hold" or "on ice" is not already in a "starting" or "running" state
 - » A job that is either "starting" or "running" cannot be put "on hold" or "on ice"



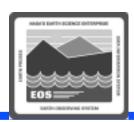
- Guidelines for Force-Starting Jobs
 - Force-start command jobs (e.g., allocation, staging, preprocessing) only
 - Do not attempt to force-start a box job
 - » The software does not support box job force-starts
 - » Force-starting a box job can cause the PDPS database to get out of sync and prevent the DPR (and possibly other DPRs) from running successfully
 - » If a box job were force-started, the allocation job would run again and might choose a different science processor than was chosen the previous time the job ran, which could cause failure of the job
 - » Box job force-starts lack the code needed to check the state of the box and perform the database cleanup activities necessary for starting over



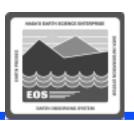
- Guidelines for Force-Starting Jobs (Cont.)
 - Ensure that the GUI has refreshed and the job to be force-started is not already running before trying to force-start a job
 - » If a job is already running, it should not be forcestarted
 - » If using AutoSys/AutoXpert 3.4.2 or a later version, it should not be possible to force-start jobs that are already running
 - If any command job other than execution fails, force-start the job that failed only
 - Do not force start any preceding or succeeding jobs in the box



- Guidelines for Force-Starting Jobs (Cont.)
 - If execution fails, it is not safe to restart it unless the post-processing job had been put on hold and the failure was detected before post-processing started running
 - If execution fails and the failure was not detected before post-processing started running, the DPR must run to completion as a failed PGE and the DPR must be deleted and recreated
 - In any case the Production Monitor may implement certain changes of job status only when the Production Monitor "owns" the job affected by the modification

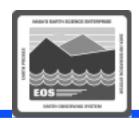


- Determining the Ownership of an AutoSys Job
 - AutoSys is very much ownership-aware
 - » Only the "owner" of a job has "edit" privileges and can make changes to the status of an owned job
 - AutoSys recognizes ownership in terms of two factors:
 - » UserID
 - » Machine where the operator (user) logged in
 - Example:
 - » cmshared@g0sps06 identifies the Production Monitor who logged in as "cmshared" at g0sps06
 - » Any operator who logs in as "cmshared" at another machine (e.g., g0pls01) would not be able to change the status of a job "owned" by cmshared@g0sps06
 - » To have any real effect on a job first it is necessary to log in as the job's owner and launch AutoSys GUIs

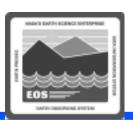


- Procedure (Determining the ownership of a Job)
 - Click on the JobScape button (or TimeScape button) on the AutoSys GUI Control Panel
 - Place the mouse cursor on the relevant job and click and hold the right mouse button
 - Select (highlight) Job Definition from the pop-up menu (release the right mouse button)
 - Review the entry in the Owner field of the Job Definition GUI
 - To exit from the Job Definition GUI, click on the Exit button

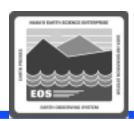
Job Definition GUI



Job Definition						
Clear	Delete		Save	Adv I	Features	Exit
Job Name	ÄACT#sy Search	n4#0030	004900	TS Job Typ	Col	mmand Watcher
Edit OneTime Over-Rides ?		Name this Jo		ACT#sy Search	n4#00300	04900TS1
Owner	cmshar	ed@t1s	ps02			
Description	I					
Date	Start /Time ndent ?			neters ate / Time Options	TS1P)	
	Comm	nand & Fi	ile Wato	h Informat	ion	
Execute On Machine	t1spg0	1				
Command To Execute File To Watch for	EcDpP	rRunPGI	E /usr/e	ecs/TS1/C	CUSTOM/	odps/t1spg

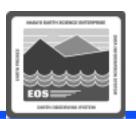


- Sending an Event to a Job
 - As previously mentioned there are three methods for making certain types of modifications (e.g., start or kill) to a particular job
 - » Menu accessed by clicking the right mouse button on the relevant job name on either the JobScape or TimeScape GUI
 - » Buttons in the Actions region of the Job Activity Console (Ops Console)
 - » AutoSys Send Event GUI

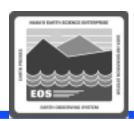


- Procedure (Sending an Event to a Job from an AutoXpert GUI)
 - Select either JobScape or TimeScape from the AutoSys GUI Control Panel
 - Place the mouse cursor on the relevant job and click and hold the right mouse button
 - Select the event (e.g., Force Start Job) to be sent to the job from the pop-up menu
 - » If there is no option corresponding to the desired action, modify job status from either the Job Activity Console or the Send Event GUI
 - Select Yes to confirm sending the event

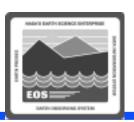
Confirmation Dialogue Box







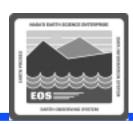
- Procedure (Sending an Event to a Job from the Job Activity Console)
 - Select jobs for display on the Job Activity Console (Ops Console)
 - Verify that the job with the status to be modified is listed in the Currently Selected Job field of the Job Activity Console
 - Click on the button corresponding to the desired action to be taken with respect to the selected job
 - » If there is no button corresponding to the desired action, modify job status using the Send Event GUI
 - Click on Yes to send the event to the job



 Sending an Event to a Job from the Send Event GUI

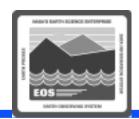
CAUTION

Once an event has been sent from the Send Event dialog, it may not be possible to cancel or modify it.



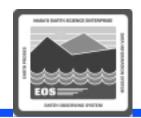
- Procedure (Sending an Event to a Job from the Send Event GUI)
 - Click on the Ops Console button and list jobs
 - In the Job List region of the Job Activity Console click on the job row corresponding to the job
 - Click on the Send Event button
 - Select the Event Type
 - Enter the desired date and time when the job status is to be modified
 - Change the Queue Priority entry if Change Priority was selected
 - Select Status to send if Change Status was selected
 - Select the Send Priority
 - Click on the Execute button

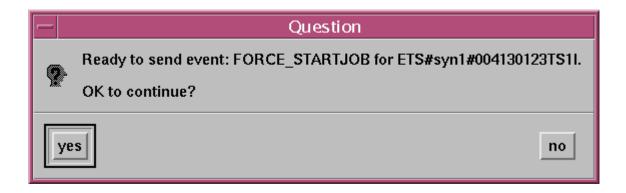
Send Event GUI

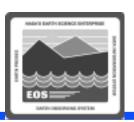


_		Send Event		
	♦ Start Job	♦ Force Start Job ♦ Change Priority		
	→ Job On Hold			
Event Type	→ Job Off Hold			
		♦ Kill Job		
		♦ Change Status		
	☐ Cancel Previous	ly Sent Event		
Job Name	Job Name ACT#syn4#003004900TS1E			
		e [02/20/2000 (MM/DD/[YY]YY)		
♦ Now		(hh:mm)		
Comment				
AUTOSERV Instance VAT				
Global Name	<u> </u>	Global Value		
Signal	Ĭ.	Queue Priority		
Status	Running =	Send Priority 🔷 Normal 💠 High		
Execut	e	Cancel		

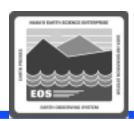
Send Event GUI: Confirmation Dialogue Box



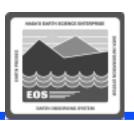




- Procedure (Canceling a Sent Event)
 - Click on the Send Event button in the Actions Region of the Job Activity Console
 - Click on Event Type to select the type of event that was sent to the job and is to be canceled
 - Click on the Cancel Previously Sent Event button
 - Verify that the correct job is listed in the Job Name field of the Send Event GUI
 - Click on the Execute button
 - Click on Yes to confirm canceling the sent event

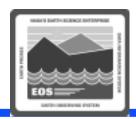


- Performing Job Management Client Functions
 - Job Management Client tool is a set of utility programs intended primarily for use by software developers
 - Get access to any of the following Job Management Client functions from AutoSys by clicking on the Client Tool button in the Actions region of the Job Activity Console
 - » Create DPR Job
 - » Release DPR Job
 - » Cancel DPR Job
 - » Change DPR ID
 - » View Job Management DPR Queue
 - » Create Ground Event Job
 - » Cancel Ground Event Job



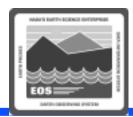
- Procedure (Performing Job Management Client Functions)
 - Verify that the job with the status to be modified is listed in the Currently Selected Job field of the Job Activity Console (Ops Console)
 - Click on the Client Tool button
 - Enter the number corresponding to the desired function at the "enter an option" prompt
 - Enter responses to Job Management Client prompts

Job Activation User Interface Window



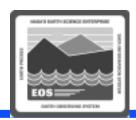
```
lobs Activation User Interface
Warning: Could not open message catalog "oodce.cat"
01/31/99 13:41:25: [Warning:
Invalid Resource Catalog directory path or no catalog installed
Applications can run with or without Resource Catalog
FYI : Values of ECS_HOME env variable and RC Directory path:/usr/ecs/TS1/CUSTOM/data/DPS/ResourceCatalogs
Creating DpPrSchedulerProxy object...
DpPrSchedulerProxy:: In Constructor
Client Path: /.:/subsys/ecs/TS1/EcDpPrJobMgmt
01/31/99 13:41:25: EcNsServiceLocClient.C - Next Binding:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[]
01/31/99 13:41:25: EcNsServiceLocClient.C - Trying binding:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[55619]
01/31/99 13:41:25: EcNsServiceLocClient.C - Binding to be returned:
        3975babe-b23d-11d2-bb71-c676e80daa77@ncacn_ip_tcp:198.118.232.13[55619]
01/31/99 13:41:26: Client Successfully connected to the server object
MODPGE08#s28020500TS2P is an invalid job box
An invalid dprId was chosen,
*** Current DprId:NONE Current Mode:TS1 ***
 0) Exit
 1) Create Dpr Job
 2) Release Dpr Job
 3) Cancel Dpr Job
 4) Change Dpr Id
 5) View Job Management Dpr Queue
 6) Create Ground Event Job
 7) Cancel Ground Event Job
enter an option:
```

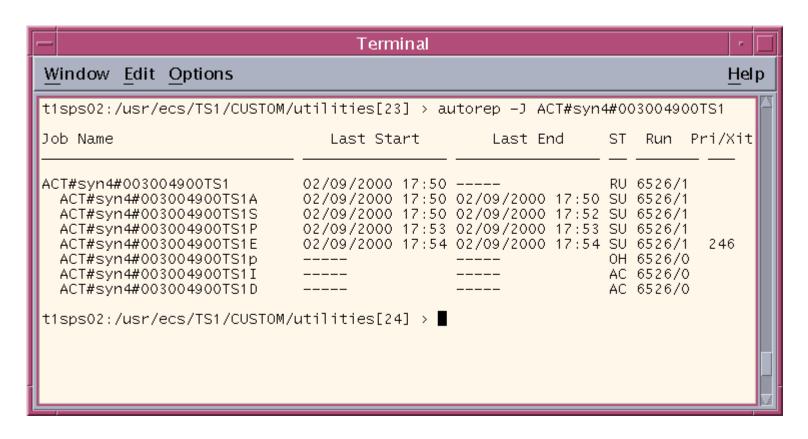
Reviewing Activity and Job Dependency Reports



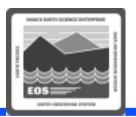
- Reviewing a Job Activity Report
 - Production Monitor reviews a job activity report to determine...
 - » which jobs are currently in the AutoSys queue
 - » which jobs have been completed
 - » the completion status of jobs that have been completed
 - » which jobs are currently running

Sample Job Activity Report





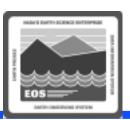
Reviewing Reports (Cont.): Job Activity Report



Procedure

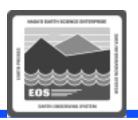
- Set up AutoSys
- Type autorep -J ALL unless the command needs to be modified to:
 - » specify a particular job
 - » obtain a machine report
 - » obtain a summary report
 - » obtain a detailed report
 - » obtain a query report
 - » print the document
 - » save the document in a file
- Review the Job Activity Report to identify job states

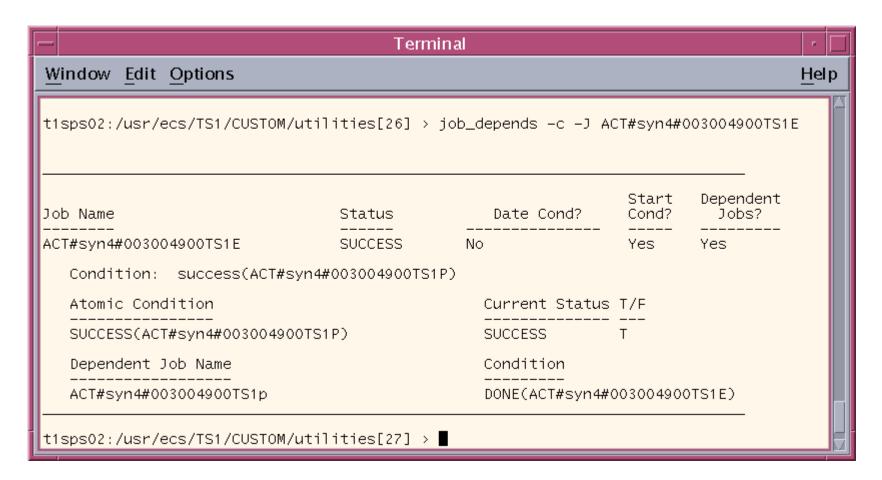
Reviewing Reports (Cont.)



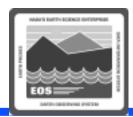
- Reviewing a Job Dependency Report
 - Production Monitor reviews a job dependency report using the AutoSys job_depends command
 - job_depends command reports information about the dependencies and conditions of jobs
 - » current state of a job
 - » job's dependencies
 - » dependencies and nested hierarchies (for boxes) as specified in the job definition
 - » forecast of what jobs will run during a given period of time

Sample Job Dependency Report





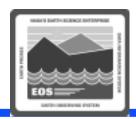
Reviewing Reports (Cont.): Job Dependency Report



Procedure

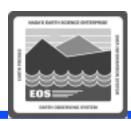
- Set up AutoSys
- Type job_depends -c -J ALL unless the command needs to be modified to:
 - » specify a particular job
 - » obtain the current condition status
 - » obtain the dependencies only
 - » obtain the time dependencies
 - » print the document
 - » save the document in a file
- Review the Job Dependency Repot to determine job states

Defining and Running Monitors/Browsers



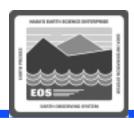
- Defining Monitors/Browsers
 - ECS does not currently support AutoSys monitor/browser capabilities
 - » However, they are functional and available
 - Production Monitor can use the AutoSys Monitor/Browser GUI to define monitors and browsers
 - » With no expectation of ECS support if problems are encountered
 - monitor function can limit monitoring to alarms and changes of job status (e.g., from "running" to "success" or "failure")
 - browser function can be used to determine the eventual status of jobs run during the preceding shift or day; e.g., which jobs were successful, which jobs failed, and which jobs are still running

Sample Browser Screen



	ER: Browser					
Job: ACT#syn3#004130123TS2E RUNNING	02/18/2000 15:30:41	Run# 6537:1				
Job: ACT#syn3#004130123TS2E SUCCESS	02/18/2000 15:30:43	Run# 6537:1	Exit			
Code=0						
JOB_OFF_HOLD Job: ACT#syn3#004130123TS2p Machine:						
02/18/2000 15:31:59 Run# 6537:0						
Job: ACT#syn3#004130123TS2p STARTING	02/18/2000 15:32:05	Run# 6537:1				
Job: ACT#syn3#004130123TS2p RUNNING	02/18/2000 15:32:07	Run# 6537:1				
Job: ACT#syn3#004130123TS2p SUCCESS	02/18/2000 15:32:14	Run# 6537:1	Exit			
Code=0						
Job: ACT#syn3#004130123TS2I STARTING	02/18/2000 15:32:21	Run# 6537:1				
■ Job: ACT#syn3#004130123TS2I RUNNING	02/18/2000 15:32:25	Run# 6537:1				
Job: ACT#syn3#004130123TS2I SUCCESS	02/18/2000 15:32:47	Run# 6537:1	Exit			
Code=0						
Job: ACT#syn3#004130123TS2D STARTING	02/18/2000 15:32:54	Run# 6537:1				
Job: ACT#syn3#004130123TS2D RUNNING	02/18/2000 15:32:58	Run# 6537:1				
Job: ACT#syn3#004130123TS2D SUCCESS	02/18/2000 15:33:06	Run# 6537:1	Exit			
Code=0						
Job: ACT#syn3#004130123TS2 SUCCESS	02/18/2000 15:33:12	Run# 6537:1	Exit C			
ode=0						
CHK_MAX_ALARM Job: ACT#syn3#004130123TS2E Machine: t1spg01						
02/18/2000 16:01:41 Run# 6537:1						

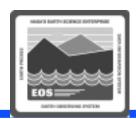
Monitors/Browsers (Cont.): Defining Monitors/Browsers



Procedure

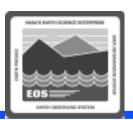
- Click on the Monitor/Browser button on the AutoSys GUI Control Panel
- Type a name for the monitor or browser in the Name field near the top of the GUI
- Select Types of Events
- Select Job Status Events
- Select the desired Job Selection Criteria
- Select the desired Monitor Options if applicable
- Select the desired Current Run Time and/or Events After Date/ Time, which are the Browser Time Criteria if applicable
- Select the desired Mode
- Save the monitor/browser

Monitor/Browser GUI



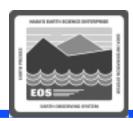
─ Monitor/Browser				
Clear Delete	Save Run MonBro Exit			
Name REF_MON_	Mode			
ALL EVENTS Alarms Job of CHANGE- STATUS Events ALL Job STATUS Fig. 156	these Types of Events CHANGE_STATUS Events unning			
Job Sele ALL Jobs Sox with its Jo Single Job	obs Job Name			
Monitor Options Sound Verification Required for Alarms	Browser Time Criteria Current Run Only - or - Events After Date/Time (MM/DD/YY hh:mm)			

Monitors/Browsers (Cont.)



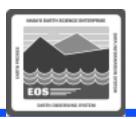
- Running Monitors/Browsers
 - may be run from the Monitor/Browser GUI as described in the preceding procedure
 - may be run using a UNIX command

Monitors/Browsers (Cont.): Running Monitors/Browsers



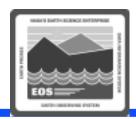
- Procedure (Running Monitors/Browsers from the Monitor/Browser GUI)
 - Click on the Monitor/Browser button on the AutoSys GUI Control Panel
 - Enter the name of the monitor/browser in the Name field
 - Click on the Run MonBro button
 - Click on the Exit button to exit from the Monitor/Browser GUI
 - Review the monitor/browser results
 - Type Ctrl-C in the browser/monitor window to exit from the browser or monitor

Monitors/Browsers (Cont.): Running Monitors/Browsers



- Procedure (Running Monitors/Browsers Using UNIX Commands)
 - Set up AutoSys
 - Type monbro -N name &
 - Review the monitor/browser results
 - Type Ctrl-C in the browser/monitor window to exit from the browser or monitor

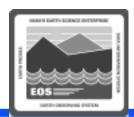
Changing the Database Maintenance Time



Database Maintenance Time

- Once a day the Event Processor (also known as the AutoSys daemon) goes into an internal database maintenance cycle
- During this time, it does not process any events
- It waits for the maintenance activities to be completed before resuming normal operations
- Time of day for start-up of the maintenance cycle is pre-set to 3:30 AM
- Database maintenance cycle takes approximately one minute
- If it is necessary to change the time when the maintenance cycle occurs, whoever has "write" access to the configuration file can reset it
 - » Preferably to a time when there is minimal activity

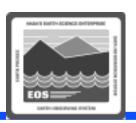
Changing the Database Maintenance Time (Cont.)



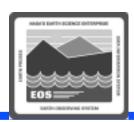
Procedure

- Access the command shell
- Set the DISPLAY environmental variable
- Log in to the Queuing Server host using secure shell
- Change directory to the directory containing the config. AutoSysInstance file
- Use the vi editor to find DBMaintTime=03:30 and replace the existing time with the desired time in 24 hour format (hh:mm)
- Save the edited file

Tuning System Parameters

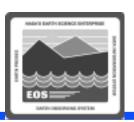


- System parameters may be subject to control by Configuration Management (CM)
 - When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable)
- Two types of places where parameters can be set:
 - PDPS database
 - Configuration files
- In general the system parameters in the database are modified using the GUI
- System parameters specified in configuration files are modified by editing the appropriate configuration file



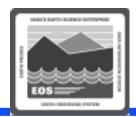
Configuration Registry

- Scheduled for the second delivery of Release 5B
- Significant change in the management of ECS configuration parameters
 - » Configuration Registry Server will provide a single interface for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry Database, via a Sybase server
 - » Configuration Registry Database will be loaded with data from the configuration files
 - » After the Configuration Registry is loaded the configuration files will be moved or renamed, making them inaccessible to the applicable servers
 - » When ECS servers are started they will access the Configuration Registry Database to obtain needed configuration parameters



- Configuration Registry (Cont.)
 - Database Administrator will have access to a Configuration Registry GUI for viewing and editing configuration data in the database
 - It will be necessary to coordinate with the Database Administrator when changes to configuration parameters are needed
 - Changes to configuration-controlled parameters are subject to approval through the site CM process

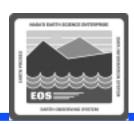
Modifying System Parameters in Configuration Files (Cont.)



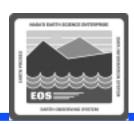
 When the value assigned to a parameter in a configuration file has been changed and saved, the modified value does not take effect until the affected server has been restarted

Example

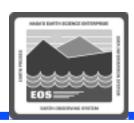
- Debug level for the Subscription Manager log has been changed from "2" to "3" in the Subscription Manager configuration file
- Modification does not affect the recording of data in the log until after a warm restart of the Subscription Manager (at which time the server would read the configuration file)



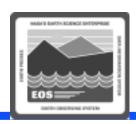
- Tuning Parameters specified in configuration files
 - AppLogSize
 - » Maximum size of the application log (ALOG) file for the application in whose configuration file the parameter is specified
 - AppLogLevel
 - » Level of detail provided in the ALOG file for the application in whose configuration file the parameter is specified
 - » Setting of "0" provides the most data
 - DebugLevel
 - » Level of detail provided in the debug log file for the application in whose configuration file the parameter is specified
 - » Setting of "3" provides the most data



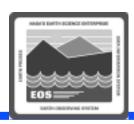
- Tuning Parameters specified in configuration files (Cont.)
 - DpPr_MAX_RETRIES
 - » Number of retries to the Science Data Server for acquires/inserts before giving up
 - DpPr_WAIT_PERIOD
 - » Time (in seconds) to wait between retries to the Science Data Server
 - ListenThreads
 - » Number of listen threads assigned to the application in whose configuration file the parameter is specified
 - DpPrRM_MAX_RETRIES
 - » Number of retries when creating a Data Manager object (trying to allocate)
 - DpPrRM_RETRY_PERIOD
 - » Amount of time (in seconds) between retries when creating a Data Manager object (trying to allocate)



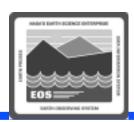
- Tuning Parameters specified in configuration files (Cont.)
 - DpPrAutoSysMaxJobs
 - » Maximum number of jobs in AutoSys at one time
 - » Dividing the value assigned to DpPrAutoSysMaxJobs by eight produces the number of PGEs that can be in AutoSys at one time
 - » Changing the value assigned to DpPrAutoSysMaxJobs affects the number of jobs (for the applicable mode) allowed in AutoSys at a time
 - » DpPrAutoSysMaxJobs parameter and number of CPUs assigned to the mode should be adjusted as necessary to ensure that all CPUs can be used but AutoSys is not overloaded with jobs waiting to be processed



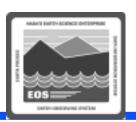
- Tuning Parameters specified in configuration files (Cont.)
 - DpPrAutoSysMaxJobs
 - » Maximum number of jobs in AutoSys at one time
 - » Dividing the value assigned to DpPrAutoSysMaxJobs by eight produces the number of PGEs that can be in AutoSys at one time
 - » Changing the value assigned to DpPrAutoSysMaxJobs affects the number of jobs (for the applicable mode) allowed in AutoSys at a time
 - » DpPrAutoSysMaxJobs parameter and number of CPUs assigned to the mode should be adjusted as necessary to ensure that all CPUs can be used but AutoSys is not overloaded with jobs waiting to be processed



- Tuning Parameters specified in configuration files (Cont.)
 - MaxSlippagePerc
 - » Percentage by which a granule can slip and still be considered a match
 - AcceptableCertainty
 - » Minimum overlap a granule must have
 - DBConnections
 - » Number of connections needed by the application in whose configuration file the parameter is specified. Subscription Manager maintains only one connection to the database

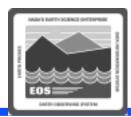


- Tuning Parameters specified in configuration files (Cont.)
 - SleepDelayForFailures
 - » Amount of time (in seconds) to wait before reprocessing failed notifications
 - » If the specified value is less than 60, a default value of 60 seconds would be assumed
 - SleepDelayForTimers
 - » Amount of time (in seconds) the Subscription Manager should sleep between checking for expired timers
 - » Should be set to the minimum amount of time a timer will be set for at this DAAC
 - » Minimum it can be set to is 60 seconds



- Tuning Parameters specified in configuration files (Cont.)
 - Default and adjusted values vary from site to site
 - Values listed in the table in the text are provided as examples only
 - Refer to the appropriate 920- TDx- 013 Custom Code Configuration Parameters document
 - » Documents are available at URL http://cmdm.east.hitc.com/baseline/ under "Technical Documents"

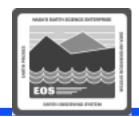
Modifying System Parameters in Configuration Files



Procedure

- Access the command shell
- Set the DISPLAY environmental variable
- Log in to the Planning/Management Workstation,
 Queuing Server, or PDPS DBMS Server as
 applicable using secure shell
- Change directory to the directory containing the applicable .CFG file
- Use the vi editor to find the parameter to be changed and replace the existing value with the desired value
- Save the edited file

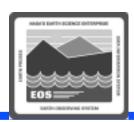
Modifying System Parameters in Configuration Files (Cont.)



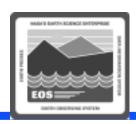
 When the value assigned to a parameter in a configuration file has been changed and saved, the modified value does not take effect until the affected server has been restarted

Example

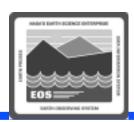
- Debug level for the Subscription Manager log has been changed from "2" to "3" in the Subscription Manager configuration file
- Modification does not affect the recording of data in the log until after a warm restart of the Subscription Manager (at which time the server would read the configuration file)



- Production Planner and Production Monitor should work with the Resource Planner to make optimum use of processing resources
 - Resource Planner allocates the disk partitions,
 CPUs, and RAM available for processing among the active modes (e.g., OPS, TS1, TS2)
 - Production Planner and Production Monitor monitor the load on the processing resources



- Resource Planner assigns the bulk (typically 60% - 80%) of the processing resources to the OPS mode
 - The remainder of the processing assets are divided among the modes used for SSI&T and new version software checkout
- The Production Planner and Production Monitor monitor the load on the processing resources to identify whether the actual load is appropriately distributed among modes
 - They may either...
 - » inform the Resource Planner of under- or over-use of resources as allocated
 - » have the DpPrAutoSysMaxJobs variable in the EcDpPrJobMgmt.CFG file adjusted

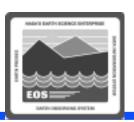


Disk space allocation

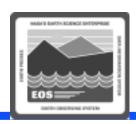
- Disk space allocated to OPS mode is likely to be used to capacity
- Disk space assigned to the other two modes may not fill up

CPU allocation

- There is no one-to-one mapping of CPU allocation with actual CPUs on the science processor
- The operating system(OS) takes care of true CPU and RAM allocation
 - » Actual CPU usage during processing is limited by OS
 - » If ten CPUs have been specified for a particular mode, only ten DPRs can be running the Execute job at a given time
 - » What is really being defined is the maximum number of DPRs that will execute at a given time

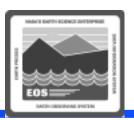


- CPU allocation (Cont.)
 - CPUs can be over-allocated or under-allocated as necessary to get the most out of the CPUs on each science processor
 - » If monitoring indicates that the processor is underused when OPS mode is at full processing capacity, the number of CPUs allocated to OPS mode could probably be increased
 - » If the science processor is at full capacity when OPS mode is at full processing capacity (and the processor may be overworked) the number of CPUs allocated to OPS mode should be reduced
- Random-access memory (RAM) allocation
 - Subject to the same considerations as CPUs
 - RAM can be over-allocated or under-allocated as necessary to get the most out of the memory on each science processor



- Throttling of the processing load through the DpPrAutoSysMaxJobs variable
 - Defined in the EcDpPrJobMgmt.CFG file in the /usr/ecs/MODE/CUSTOM/cfg directory on the Queuing Server (e.g., g0sps06)
 - If DpPrAutoSysMaxJobs in OPS mode is set at 64 (allowing AutoSys to accommodate eight DPRs simultaneously in OPS mode) and ten CPUs are defined for OPS, all ten CPUs would not be utilized
 - If the value of DpPrAutosysMaxJobs were increased to 120 (15 DPRs), there might be times when the processing of some DPRs was held up because only ten could be in Execute at a time
 - » In such a case it might be possible to increase the number of CPUs allocated to the mode so that more than ten DPRs could be running the Execute job simultaneously

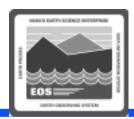
Troubleshooting Processing Problems



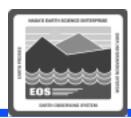
Troubleshooting:

process of identifying the source of problems on the basis of observed trouble symptoms

Troubleshooting Processing Problems

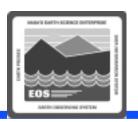


- Problems with production planning can usually be traced to...
 - some part of the Data Processing Subsystem
 - problems in other ECS subsystems, including (but not necessarily limited to):
 - » Planning Subsystem (PLS)
 - » Data Server Subsystem (DSS)
 - » Interoperability Subsystem (IOS)
 - » Communications Subsystem (CSS)

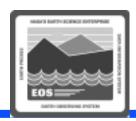


Troubleshooting table

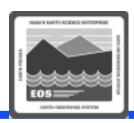
- describes actions to be taken in response to some common Processing problems
- if the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy



Symptom	Response
Unable to log in to the Queuing Server host (e.g., g0sps06).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	Ensure that the DISPLAY variable was set properly. [For detailed instructions refer to the procedure for Launching the AutoSys GUI Control Panel (previous section of this lesson).]
Entire processing system hangs (no jobs change state over time).	Refer to the procedure for Responding to Hanging of the Processing System (subsequent section of this lesson).
Jobs are activated but do not get started in AutoSys.	Refer to the procedure for Responding to Failure of Jobs to Start in AutoSys (subsequent section of this lesson).
AutoSys box job hangs (does not change state over time).	Refer to the procedure for Handling a Box Job that is Hanging in AutoSys (subsequent section of this lesson).
"Allocate" job hangs (does not change state over time).	Refer to the procedure for Handling a Hanging Allocation Job (subsequent section of this lesson).
"Allocate" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Allocation Job (subsequent section of this lesson).
"Stage" job hangs (does not change state over time).	Refer to the procedure for Handling a Hanging Staging Job (subsequent section of this lesson).
"Stage" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Staging Job (subsequent section of this lesson).

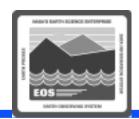


Symptom	Response			
"Preprocess" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Preprocessing Job (subsequent section of this lesson).			
"Execute" job hangs (job has turned orange or oscillates between orange and green on JobScape or TimeScape).	Refer to the procedure for Handling a Hanging Execution Job (subsequent section of this lesson).			
"Execute" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Execution Job (subsequent section of this lesson).			
"Post-process" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Post-Processing Job (subsequent section of this lesson).			
Both the "Execute" and "Post- Process" jobs fail (jobs have both turned red on JobScape or TimeScape).	Refer to the procedure for Handling Failure of Both Execution and Post-Processing Jobs (subsequent section of this lesson).			
"Insert" job fails (job has turned red on JobScape or TimeScape).	Refer to the procedure for Handling a Failed Insertion Job (subsequent section of this lesson).			



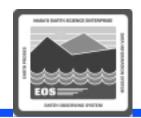
Symptom	Response		
"Deallocate" job fails (job has turned red on JobScape or TimeScape).	 Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 12) are "up." If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. If hosts/servers are all "up," check the log files (e.g., DPR#.ALOG) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).] 		
On-Demand Processing Request fails.	Refer to the procedure for Handling a Failed On-Demand Processing Request (subsequent section of this lesson).		
Other problems.	Check the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrJobMgmt.Debug.log, EcDpPrDeletion.ALOG, DPR#.ALOG, DPR#.err, etc.) in the /usr/ecs/MODE/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for Checking Log Files (subsequent section of this lesson).]		

Hosts, Servers, Clients and Other Software Relevant to Processing

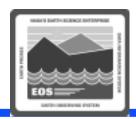


HOST	PROCESSING PHASE						
SERVER/CLIENT/OTHER SOFTWARE NOTE: Servers that are displayed on ECS Assistant are shown in boldface type in the table. NOTE: Depending on the installation, software may be loaded on hosts other than the examples provided.	A L O C A T E	S T A G E	P R E P R O C E S S	E X E C U T E	P O S T P R O C E S S	I N S E R T	DEALLOCATE
Science Processor (e.g., x0spg01)	Х	Х	Х	Х	Х	Х	Х
PGE Management (EcDpPrRunPGE)				Х			
Resource Usage (EcDpPrRusage)				Х			
PGE				Х			
Queuing Server (e.g., x0sps04)	Х	Х	Х	Х	Х	Х	Χ
Job Management Server (EcDpPrJobMgmt)	Х	Х	Х	Х	Х	Х	Χ
Deletion Server (EcDpPrDeletion)	Х	Х	Х	Х	Х	Х	Χ
Data Management (EcDpPrDM)		Χ				Х	
Execution Management (EcDpPrEM)	Х		Х		Х		Χ
PDPS DBMS Server							
Subscription Manager (EcDpPlSubMgr)							
Distribution Server (e.g., x0dis02)	Х	Х				Х	
Distribution Server (EcDsDistributionServer)	Х	Х				Х	
SDSRV Server (e.g., x0acs05)	Х	Х				Х	
Science Data Server (EcDsScienceDataServer)	Х	Х				Х	

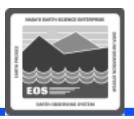
Hosts, Servers, Clients and Other Software Relevant to Processing



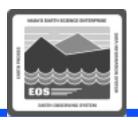
HOST		PROCESSING PHASE						
SERVER/CLIENT/OTHER SOFTWARE NOTE: Servers that are displayed on ECS Assistant are shown in boldface type in the table. NOTE: Depending on the installation, software may be loaded on hosts other than the examples provided.	A L O C A T E	S T A G E	P R E P R O C E S S	E X E C U T E	P O S T P R O C E S S	I N S E R T	DEALLOCATE	
APC Server (e.g., x0acg01)	Х	Х				Х		
Archive Server (EcDsStArchiveServer)	Х	Х				Х		
FTP Distribution Server (EcDsStFtpDisServer)	Х	Х				Х		
Staging Monitor Server (EcDsStStagingMonitorServer)		Х				Х		
Staging Disk Server (EcDsStStagingDiskServer)		Х				Х		
Pull Monitor Server (EcDsStPullMonitorServer)								
Interface Server 01 (e.g., x0ins02)		Х				Х		
Advertising Server (EcloAdServer)		Χ	Х			Х		
Interface Server 02 (e.g., x0ins01)		Х				Х		
Subscription Server (EcSbSubServer)		Х				Х		
Event Server (EcSbEventServer)								
Data Dictionary (EcDmDictServer)								



- Responding to hanging of the processing system
 - Checking AutoSys status
- Responding to failure of jobs to start in AutoSys
 - Checking Job Management server status
 - Checking to determine whether the DPR is waiting in the AutoSys queue (never got released)
 - Responding to a DPR that was released but failed due to an AutoSys ID failure
 - Responding to a DPR that was released but failed due to invalid DPR
 - Responding to a DPR that was released but failed to be received by Job Management server

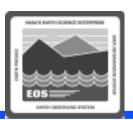


- Responding to a single DPS job that has failed or is hanging
 - Handling a box job that is hanging in AutoSys
 - Handling a hanging Allocation job
 - Handling a failed Allocation job
 - Handling a hanging Staging job
 - Handling a failed Staging job
 - Handling a failed Preprocessing job
 - Handling a hanging Execution job
 - Handling a failed Execution job
 - Handling a failed Post-Processing job
 - Handling a failed Insertion job



- Handling a failed On-Demand Processing Request
 - Responding to a DPR that failed in OdMgr because the PGE ID could not be found
- Checking log files

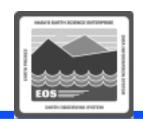
Launching the QA Monitor



Procedure

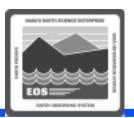
- Access the command shell
- Set the DISPLAY environmental variable
- Log in to the Planning/Management Workstation using secure shell
- Set the ECS_HOME environmental variable if necessary
- Start the QA Monitor GUI in the appropriate mode

QA Monitor GUI: QRU Data Tab



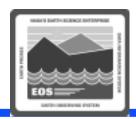
Q/A Monitor	
File	Help
QRU data Visualize data Data Types	
DAP FAILPGE MOD00 MOD01 MOD02HKM MOD03	
MOD03LUT MOD10_L2 MOD35 12 Query Find I	
Data Granules: Acquisition Acquisition First Granule Prod.History Date Time FileName 08/05/96 11:55:01 :SC:MOD10_L2:1411:1.HDF-EOS 21.3 PGE07#1.0#1 PGE07#1.0#1 08/05/96 11:55:01 :SC:MOD10_L2:1325:1.HDF-EOS 21.3 PGE07#1.0#1	
08/05/96 11:55:01 :SC:MOD10_L2:1279:1.HDF=EOS 21.3 PGE07#1.0#	010805961!
Find I	
Retrieve DataGranule Retrieve ProdHistory Update Meta	udata
Status:Done Querying Data Server	

Performing Science Product Quality Assurance (QA)



- Uses the QA Monitor application
- Science Computing Facility Personnel
 - responsible for performing QA of their products
- Production Monitor
 - updates QA metadata in response to a request from SCF personnel to set the metadata flags on specified granule(s)

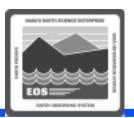
Updating Quality Assurance (QA) Metadata



Procedure

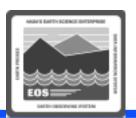
- Set up and query the database using the QA Monitor GUI
- Select the granule with QA metadata to be updated
- Set the operational and SCF quality flags to the appropriate value (as specified by the SCF personnel)
- Verify that the flags have actually been set in the database by repeating the set-up and query processes

QA Monitor GUI: Granule Parameters Window



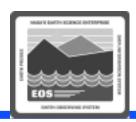
E		Granule	Parameters
	Parameter Name	Operational QA Flag	Operational Flag Explanation
	Snow Cover	Being Investigated	Default flag and comment set t
	<u> </u>		
	Find		
		ОК	Cancel

QA Monitor GUI: Update Meta Data Window



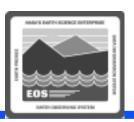
_		Update Met	a Data
			Explanation
Operational Quality Flag	Being Investigated	=	Default flag and comment set by system.
SCF Quality Flag	Being Investigated		Default flag and comment set by system.
Auto Quality Flag	Passed		Fassed if algorithm ran within bounds of executi
OK		Cancel	Help

Regenerating Granules



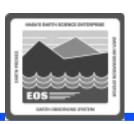
- Produce replacements for previously generated granules that have been lost or corrupted due to failure in the ECS archive
- General Process:
 - Retrieve the Production History file (PH) for the lost granule to determine parameters for the generation of replacement granules
 - Create Production Requests for the generation of replacement granules
 - Create and activate a Production Plan that includes the Production Requests for the generation of replacement granules
 - Prepare (if applicable) a "PDPS Residual Granules List," which identifies granules that either cannot or should not be regenerated at the DAAC
 - Some granules do need not be reproduced; e.g., if there is a more recent version of the product

Regenerating Granules (Cont.)



- Considerations that apply to the regeneration of granules:
 - All outputs of the PGE [not just those equivalent to the lost granule(s)] are to be produced and archived
 - Various factors could make it impossible to reproduce granules identical to the originals
 - » There is no guarantee that when a PGE is re-run it will use the same inputs as were used during the original execution of the PGE; consequently, the output may be different from the original granule(s)
 - » Variability of Optional/Alternate inputs, Ad Hoc Reprocessing, Metadata Checks, Metadata Query and other production rules affects PGE output

Regenerating Granules (Cont.)



Procedure

- Retrieve the Production History tar file for each granule in the Granules for PDPS Re-Generation list that needs to be reproduced
- Launch the SSIT Manager GUI
- Re-register the PGE (if not currently registered)
- Launch the Production Request Editor
- Create a Production Request for the relevant PGE/version/profile ID
- Launch the Planning Workbench
- Create and activate a production plan that includes the newly created Production Request(s)
- Send the PDPS Residual Granules list to the originator of the Granules for PDPS Re-Generation list